Place of Foreign Trade in Making Modern Nations Secure Outlined by Tweedell

YORK, Pa.—Modern nations need foreign trade in both manufactured and agricultural commodities if they are to attain that security which they seek, J. C. Tweedell, export manager of York Ice Machinery Corp., told members of the York Rotary Club in an address during National Foreign Trade Week.

"The first question which we might reasonably ask ourselves in considering the subject of foreign trade," said Mr. Tweedell, "is whether any nation actually reaches the desired security without dependence on foreign trade. The answer to that, so far as the so-called 'ancient' nations are concerned, must be 'yes,' for many of these nations have long existed under policies in which trade with other nations played almost no part.

Progress Made in China

"Only in comparatively recent times have representatives of the more 'enlightened' nations come along and showed them the way to better standards of living. In China, for example, long considered to be perhaps the most remote of all nations from our mode of living, you will find today many modern structures, among them a 22-story, ultra-modern, air-conditioned office building in Shangai which rivals our American skyscrapers.

"You will find air-conditioned motion picture theaters in Nanking, China, and many other structures modeled after American design. The trend today in many of these more remote nations, one classed as 'semi-civilized' or 'isolated,' is decidedly modern where they have come into contact with, and adopted the manners and customs and methods of other nations.

Need of Foreign Trade Today

"But what of the modern nations?" Mr. Tweedell queried. "Do we need foreign trade today? Can any modern nation without foreign trade attain that security which all nations, as well as all individuals, seek?

"The answer to that question is definitely 'No'. The fact is that very few of our modern nations, under present world conditions, could even hope to approach this desirable condition of economic security and exist entirely independent of outside contacts, without the exchange of goods and commodities in the world markets.

"The nearest approach to economic self-supporting independence today is the United States," Mr. Tweedell asserted, "because within our own borders may be found most of the raw materials, minerals, and metals necessary for our own use. Our factories produce the finest quality of merchandise available, and our agricultural areas yield more than sufficient supplies of wheat, cotton, tobacco, and other crops for our own needs.

Agricultural Overproduction

"But right there is where the difficulty starts. Our agricultural sections produce *more than enough* for our own needs. What does this mean? It means that we must either export our surplus agriculture and manufactured products to other countries whose climate or facilities do not permit raising these products, or we must cut down our own production of these commodities to suit our requirements. The same thing is true of our manufactured and industrial products. We produce far more than we can use at home. We must find markets among other nations for these products, or we must curtail production.

"For, first and last, the vital and important aspect of foreign trade is its dollars-and-cents aspect. For example, one of the most important items on our long list of important items of domestic production is cotton. During a normal year we export about one half of our total crop of cotton, to the value of approximately $750,000,000.

Effect on Cotton Growers

"It is estimated that nearly twenty million American people, or one-sixth of our entire population, depend for their economic welfare, upon the foreign markets to absorb at least one-half of our cotton crops. The blow which would result from the application of an 'isolation' policy to our cotton industry would, beyond a doubt, be the worst we have seen in recent years," Mr. Tweedell asserted.

"To a greater extent than is generally appreciated, our present American citizens depend on our trade with other countries. It has been estimated that three million men will be put back to work when foreign trade once more resumes its normal volume," he said.

"Having decided that we, as a modern nation among modern nations, do need foreign trade, it still remains for us to compete in the open market with other nations for our share of the business. It is unfortunate that some of the recent policies of our Government, as well as of the governments of other nations, have created a nationalistic feeling which, for a time, was becoming more and more tense.

"Happily, however, due to our Government's very practical policy of reciprocal trade agreements, this feeling has been improved considerably, and the effect of this liberalization of policy is apparent in a lessening of international tension, which can, in my opinion, result only in an improvement in our international trade relations.

"Statistics of foreign business, notwithstanding the headlines to the contrary in our newspapers, have indicated a steady improvement over the past three years, indicating that our foreign trade is well on the way back to its normal volume. This is in spite of the worldwide 'unrest' that so frequently finds its way into our headlines.

"There is no magic formula by which our foreign trade can be developed overnight. But in general it may be said that human beings are much the same everywhere, and that the same general ethics and rules of good business procedure apply to nations that individuals employ to govern their business activities and relations."

Mr. Tweedell submitted this as a safe rule to be guided by in foreign contacts. "Although methods, and certain phases of export work may differ from those of our country in their detail or mode of handling, their essence is still the proper combination of common sense, initiative, and hard work, and there is business available for those who go after it in this spirit," he concluded.

Display of 1927 Unit and Affidavit Boosts Sales

OMAHA—A 1927 refrigerator displayed with an affidavit from the owner, saying that he had not had to call in a service man in the nine and one-half years he had owned the machine, boosted sales in the Brandeis Store 17% the first week, and an additional 13% the second, reports Robert Perelman, manager-buyer of the home furnishing department.

McNaught, Counsel for RMA & ACMA, Dies From Streptococcus Infection

YORK, Pa.—S. B. McNaught, general counsel for the Refrigerating Machinery Association and the Air Conditioning Manufacturers' Association, and a member of the legal staff of the York Ice Machinery Corp., died Saturday morning, June 27, at the West Side Sanitarium in York, Pa. He had been ill for two months with a streptococcus infection.

Mr. McNaught was best known to the industry for his activities in the organization of the Air Conditioning Manufacturers' Association, and for the leading part he took in formulating the NRA Code for the Refrigerating Machinery Association.

He was 36 years old, a graduate of Yale University (class of 1923) and the Law School at Harvard (1926). At Yale, he was a member of Beta Theta Pi fraternity, and the Senior Society of Wolf's Head. After graduation from Harvard, he practiced law in New York City, and in 1931 left the firm of Reynolds, Richards & McCutcheon to join the legal staff of the York Ice Machinery Corp.

Mr. McNaught enlisted in the Signal Corps in 1917, and was one of the youngest men in the 77th Division. He served in France for 15 months, and was severely gassed in action.

Mr. McNaught belonged to the Yale Club and the Lawyers' Club in New York, and the York Country Club and the Lafayette Club in York. He is survived by his wife, Ruth Shipley McNaught, and one daughter, Anne.

Goddard Made President Of Stoker Manufacturers

WHITE SULPHUR SPRINGS, W. Va.—R. C. Goddard was elected president of the National Association of Stoker Manufacturers at its annual convention held here recently.

Mr. Goddard, vice president of The Steel Products Engineering Co., Springfield, Ohio, in charge of the Combustioneer division, is a past president of the Midwest Stoker Association.

COMBUSTIONEER'S AUTOMATIC RESPIRATOR IS THE GREATEST ENGINEERING ACHIEVEMENT SINCE THE ADVENT OF MECHANICAL FIRING

If you want the low-down on the big profits, get all the facts about the most sensational achievement in coal burning history. It's the Automatic Respirator, which measures with uncanny accuracy the fourteen tons of air for each ton of coal burned in Combustioneer's Breathing Fuel Bed. It's the demonstrable answer to Combustioneer's *amazing economy*. But it's just one dramatic answer to Combustioneer's sales leadership.

You hear a lot of loose talk about sales features. But remember this—Combustioneer has *everything*—the proved Engineering—Research—Manufacturing and Testing facilities of a pioneer maker. What's more, Combustioneer—*and Combustioneer only*—has the Automatic Respirator and Breathing Fuel Bed—the greatest coal saving features ever invented.

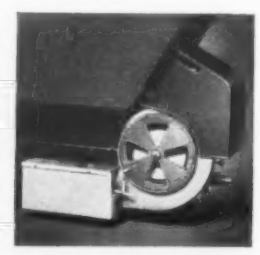
And Combustioneer has dynamic sales plans to match the unchallenged superiority of its exclusive sales-making features. We are telling you—and we are talking facts—Combustioneer has what it takes to get you faster sales and bigger profits. Write today for proof to Combustioneer, Division of The Steel Products Engineering Company, Springfield, Ohio.

★ ★ ★

This shows the Combustioneer Automatic Respirator. The air intake is normally enclosed in a louvered cover. In the other pictures, the cover is removed.

When Combustioneer is idle, and for a few moments after it starts, the Respirator keeps the air intake closed. This prevents blowing out fine particles.

As the fire gains headway, increasing amounts of oxygen are needed to support combustion. So the Automatic Respirator gradually opens the air intake.



With each little variation in chimney draft and rate of burning, the Respirator controls the air intake, opening it fully when maximum air is needed.

Patent applied for

Combustioneer

WITH THE AUTOMATIC RESPIRATOR

★

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

VOL. 18, NO. 10, SERIAL NO. 381
ISSUED EVERY WEDNESDAY

Entered as second-class matter Aug. 1, 1927

DETROIT, MICHIGAN, JULY 8, 1936

Copyright, 1936, by Business News Pub. Co.

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

Political Differences Mar World Refrigeration Congress Program

American Delegates Present Papers on Progress of Refrigeration in U.S.A.; Italians & Russians Absent

By George F. Taubeneck

THE HAGUE, Holland—Dramatic withdrawals of the Italian and Russian delegations by Dictators Mussolini and Stalin, plus ringing pleas for international peace and accord delivered at the final banquet by the chairmen of the German and British delegations, introduced international politics into the Seventh International Congress of Refrigeration, in convention here from June 16 through June 27.

Mussolini recalled the Italian delegation as a protest against the continuance of sanctions, serving notice that Italy would take part in no international movements or conventions until sanctions are formally lifted.

From Leningrad came unofficial word that the Russian delegation was kept home because of the diplomatic impasse existing between Holland and the U. S. S. R.

A considerable number of papers which were to have been presented by members of these two delegations were withdrawn from the Congress and will not be published in the Proceedings. A serious loss was suffered by the Congress in the consequent non-appearance of the Italian delegation's monumental report on its exhaustive survey of refrigerated transport throughout the world.

Heading the delegation from the United States was Gardner Poole, vice president of the Birdseye Packing Co., Boston, Mass. Mr. Poole presided at two of the sessions and presented a paper, in collaboration with M. T. Zarotschenzeff on "Advances in Quick Freezing During the Last Four Years."

N. H. Hiller, president of the Carbondale Ice Machine Co., Carbondale, Pa., also presided at two sessions, and presented a paper on "Solid CO_2 Refrigeration."

"Development of the American Household Electric Refrigeration Industry" was discussed by George F. Taubeneck, editor of ELECTRIC REFRIGERATION NEWS, who also treated "Air Conditioning as an Industry in the United States" in the absence of W. B.

(Concluded on Page 2, Column 1)

Boston Conditioning Dealers Cooperate in Bureau Activity

By Phil B. Redeker

BOSTON—Founded on the principle that business men in the same line of endeavor can solve mutual problems and work out trade practices for the advantage of all concerned by meeting periodically in a friendly atmosphere, the Air Conditioning Bureau of Boston, formed two years ago, has achieved its purposes so well as to become known as the "model" for similar bureaus in other parts of the country.

Much of the Boston Bureau's success can be attributed to its leadership—particularly that of its president, Julius Daniels of the Edison Electric Illuminating Co. of Boston, and the secretary, Daniel Ricker.

From a charter membership of 25, the bureau has grown to the extent that it now embraces more than 200 members.

Not only air-conditioning dealers, but manufacturers, utilities, installation contractors, architects, and even users are on the membership roll.

"We saw no point in being exclusive," was the way Mr. Daniels put it. Any persons or firms which have any interest at all in indoor atmospheric control should be admitted to membership, he believes.

Another thing which has encour-

(Concluded on Page 12, Column 5)

G-E Distributors to Go to Association Island

CLEVELAND — General Electric will once again go to the company-owned Association Island, in Lake Ontario, near Watertown, N. Y., for its distributors' summer sales convention to be held July 26, 27, 28, and 29. The island was used regularly for conventions several years ago.

Kelvinator Shipments Total 33,273 Units of All Types in June

DETROIT—An increase of 40% during June of this year over the corresponding month of last year brought Kelvinator shipments of household and commercial refrigerators, automatic coal and oil burning equipment, electric and gas ranges, and air-conditioning equipment to 33,273 units, as compared with 23,718 units in June, 1935, reports H. W. Burritt, vice president in charge of sales.

Total shipments of these products for the nine months' fiscal period ending June 30 were 281,565 units as compared with 202,153 units for the same period of 1935, an increase of 39%, Mr. Burritt stated.

Westinghouse Stages One-Day Drives

DETROIT—With the sale of at least 200 electric refrigerators as their goal, 300 members of the Westinghouse retail selling organization in metropolitan Detroit joined June 30 in a one-day "Fact Finding Drive" under the supervision of W. L. Howlett, manager of the refrigeration department of Westinghouse Electric Supply Co., distributor.

The drive was modeled after similar one-day campaigns staged by distributors in Pittsburgh, Cleveland, and Toledo. The Pittsburgh sale, conducted at the height of the selling season, resulted in more than 300 orders; Cleveland was next, with close to 200; and Toledo third with 76.

The sales day opened with a breakfast meeting at 7:30 a.m. at Hotel

(Concluded on Page 2, Column 3)

NOTICE

The second printing of the MASTER SERVICE MANUAL is now off the press. All back orders will be filled immediately.

In answer to complaints regarding the delay in publication of the SPECIFICATIONS BOOK, please see explanatory letter on page 10. We are making strenuous efforts to get the missing data which has held up the production of this book.

The final chapter of the REFRIGERATION ENGINEERS MANUAL was published in the NEWS June 24, and will be available in book form very soon.

Extra copies of the 1936 Household Specifications issue of the NEWS, July 1, are still available at 25 cents per copy.

Air Conditioning Specifications for 1936 will be reprinted, with additional data, in the July 29 issue of the NEWS.

Peerless Builds Line Of Air Conditioners

CHICAGO—Peerless Ice Machine Co., manufacturer of fin coils, valves, and low side accessories, has just announced a full line of floor and ceiling type completely assembled air-conditioning low sides, in sizes from 1 to 20 tons capacity. The units are designed for use with duct systems.

Also announced by the company is the "Bandbox" ceiling suspension type comfort cooler, a unit of semi-circular design available in sizes from ¾ to 2 tons.

The new units are equipped with two blowers or centrifugal wheels, capable of working against high duct resistance. In sizes up to 6 tons, these blowers are direct-connected to the motor shafts, but on opposite ends of the motor, balancing each other and eliminating motor end thrust noise and uneven bearing wear.

Air is drawn through the coils to secure even distribution over the entire cooling surface, and is discharged through sleeves for connecting to duct work. Motors and blowers being mounted above, the coils are not in danger of short-circuiting from condensate drippage. Low air velocities are used, obviating moisture eliminators and reducing current consumption.

Coils in the units incorporate Peer-

(Concluded on Page 11, Column 1)

Scientists' Testimony at Federal Hearing Discredits Claims Made In Coolerator's Ice Box Booklet

Assertions That Electric Refrigeration Injures Food Called False; Grunow Advertisement Entered as Evidence

By Winifred B. Hughes

CHICAGO—From the testimony of two noted bacteriologists discrediting any scientific basis for various assertions made in the booklet titled "Why Ice Is Best For Refrigeration," and from other testimony given by representatives of electric refrigeration manufacturers, J. T. Welch, Federal Trade Commission trial attorney, endeavored to establish a background for proving FTC charges that part of the booklet distributed by the Coolerator Co., Duluth ice refrigerator manufacturer, constituted what is alleged to be unfair competition, in the opening hearing of the case, conducted last Wednesday, Thursday, and Friday here.

The hearing, which is the first of a series to be held in key positions accessible to the commission witnesses, is being conducted under Trial Examiner J. J. Keenan of Washington. Second hearing is to be held in Duluth, Minn., on July 9 and 10, followed by a hearing in Detroit scheduled for July 13, 14, and 15. Other hearings on the case will probably be held in Dayton and in Cincinnati.

Franklin Raber of the Charles & Henry Aaron law firm, Chicago, is respondent trial attorney, and has as associate counsel, Charles Aaron, William O. Belt and Robert K. Belt, Chicago, and J. P. Taggert of the Cleveland law firm, Cannon, Speath, Spring, Anhut & Taggert.

Four highlights of the Chicago hearing were:

1. The entering, as exhibit No. 1 for the respondent (Coolerator Co.) of the General Household Utilities Co., manufacturer of Grunow electric refrigerators, advertisement headed "Worse Than Fire," which appeared in the May 27 issue of ELECTRIC REFRIGERATION NEWS, and the assertion by Chief Engineer Mahlon W. Kenney that he had not been consulted before the advertisement was run.

2. Statements made by Dr. Alexander A. Day, head of the department of Bacteriology, Northwestern university, attending bacteriologist at Passovant hospital, and consulting bacteriologist at Wesley hospital, and by Dr. Gail M. Dack, professor of medical bacteriology at the University of Chicago, whose work for the past 14 years has included an intensive study of food poisons, as to the scientific basis for assertions made in the booklet "Why Ice Is Best For Refrigeration"—on the harmful effects of electric refrigeration due to the possibilities of gas escaping from the coils and injuring the food, from dehydration, and from temperature alleged to be below a safe range, and from the formation of unhealthful matter in the ice cubes.

3. Extract from the testimony of the first witness called to the stand, H. M. Butzloff, refrigeration supervisor for Westinghouse Electric & Mfg. Co. in the northwestern district, to the effect that his company's sales, and that of other dealers in the city of Des Moines, Iowa, were definitely injured as a result of the circulation of the booklet by an ice refrigerator sales organization there.

4. Testimony of three commercial engineers of electric refrigeration manufacturing companies as to the operation, construction, assembly of electric boxes, and the nature, content, and safety features of refrigerants used in the boxes.

Directly following the opening of the trial, and statement of the complaint, Commission Trial Attorney Welch asked that an amendment be added to paragraph six, line six of the complaint, which would broaden the complaint as follows:

"For the purpose and intent, and with the effect of disparaging electric refrigerators sold in commerce, as hereinabove set out, and for the purpose and with the intent and effect of promoting the sale in commerce, as aforesaid, of non-mechanical refrigerators and the sale of ice for use therein, designated as "Why Ice is Best for Refrigeration," *and in advertising inserted in newspapers,*

(Continued on Page 4, Column 1)

Statler in St. Louis Cools 300 Rooms & All of Main Floor

ST. LOUIS—What is said to be the largest air-conditioning system of its kind in the country was put into operation last week in Hotel Statler here. The system, manufactured by Airtemp, Inc., subsidiary of Chrysler Corp., provides air conditioning for all the lower section of the hotel, including lobbies, restaurants, private dining rooms, cocktail lounge, bar, barber shop, meeting and function rooms, and 300 bedrooms.

City officials and prominent industrial leaders including Mayor Bernard F. Dickmann, Frank A. McKowne, president of the Hotels Statler Co., Thomas N. Dysart, president of the chamber of commerce, and Roscoe Nunn, regional director of the Federal Weather Bureau, participated in the ceremony in which the new system was put into operation.

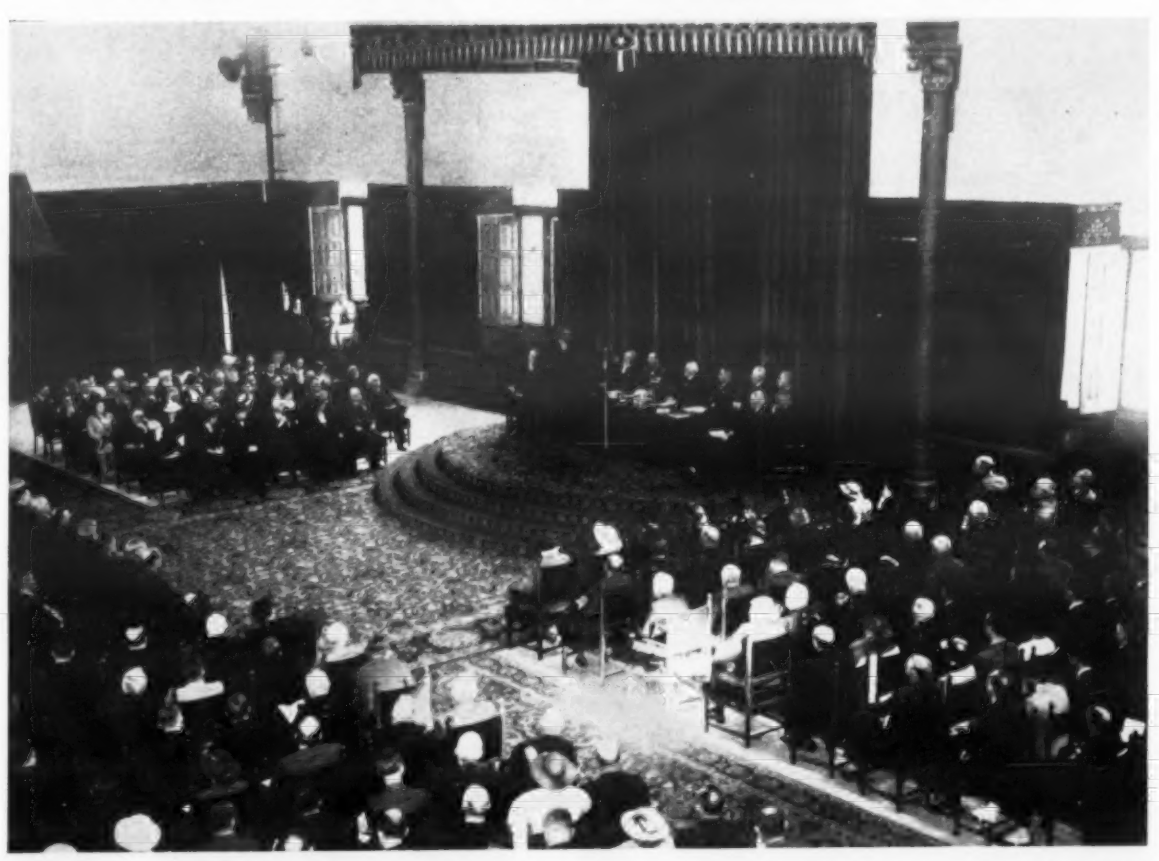
Of recent development, the new system is specially constructed to meet the requirements of hotel air conditioning under the most severe conditions of summer heat.

Hotel Statler is the first hotel in the country to use air conditioning on such an extensive scale. For more than a year the Statler system has operated a number of types of installations of various manufacture. After considerable research in the field, hotel officials selected a system of individual Airtemp room conditioners, which cool through the circulation of cold water.

Pointing out that the use of air

(Concluded on Page 11, Column 3)

Scene at the Recent World Refrigeration Congress



The Seventh International Congress of Refrigeration in session at The Hague in June. Representatives of the refrigeration industry from all parts of the world heard papers dealing with technical and commercial problems.

Recent Progress in Refrigeration Traced By Speakers at World Congress

(Concluded from Page 1, Column 1)

Henderson, executive vice president of Air Conditioning Manufacturers Association, who was scheduled to present a paper on that subject.

Fiske Reads Three Papers

"Commercial Refrigerating Practice in the United States" was the title of a paper presented by David L. Fiske, secretary of the American Society of Refrigerating Engineers. Mr. Fiske also read summaries of papers by Glenn Muffly on "A New Standard of Rating Condensing Units," and by Dan Wile of Detroit Lubricator Co. on "Control of Refrigerant in Surface Cooling Systems."

George A. Horne, vice president of the Merchants' Refrigerating Co., Plainfield, New Jersey, read a paper on "Refrigerated Warehouse Operating Costs," and presented a resume of a paper by L. S. Morse of the York Ice Machinery Corp. on "The Development of Freon-12 Refrigerating Machinery."

A paper by C. A. Aspinwall on "Cold Storage in Its Application to Furs and Fabrics" was presented by Col. Wesley Brown of Washington, D. C.

Other Members of Delegation

Other members of the American delegation included William R. Hainsworth, vice president of Servel, Inc., Arthur W. Ewell, of Worcester Polytechnic Institute, E. F. MacPike, superintendent of refrigerated traffic for Pennsylvania railroad, Prof Bernard E. Proctor, Massachusetts Institute of Technology, Leslie C. Smith of the National Association of Ice Industries, and M. T. Zarotschenzeff, Jr., of New York City.

Papers were read in German, French, or English, according to the nationality of the author. No interpreter was present at the sessions. All papers will be published with translations in these three languages, and possibly more, in the official proceedings of the Congress.

A program occupying every waking moment for two weeks was prepared for the delegates. In addition to the sessions, they went *en masse* by bus or boat to all parts of Holland on special excursions. Refrigeration installations were visited at every point on the itinerary.

Directed by Koopman

Under the direction of F. H. Koopman, consulting refrigerating engineer of the Hague, the entire program went through smoothly and on schedule. Dr. Koopman opened all meetings and directed the excursions, issuing all orders clearly in three languages, and maintaining good humor and good temper throughout.

High point of the sessions was undoubtedly the oratory of Prof. F. Henning at the final banquet, in his exhortation for world peace. Even though a large portion of his hearers did not understand German, his forensic style and his obvious sincerity swept the entire assembly to a high emotional pitch.

Gordon and Plank Speak

Afterward, Lord Dudley Gordon, managing director of J. E. Hall, Ltd., of London, remarked that "one would never guess that we had all been at war with one another too recently," and Prof. Rudolph Plank, director of the famous Technical Institute at Karlsruhe, Germany, declared:

"If the politicians would only turn international diplomacy over to the engineers for a time, international harmony could be established within a year."

Delegations were present from the United States, England, Japan, France, Germany, Belgium, Holland, India, Australia, Argentina, Austria, Canada, Denmark, Spain, Greece, Trinidad, Java, Ireland, Norway, New Zealand, Poland, Portugal, Roumania, South Africa, Sweden, Switzerland, and Yugoslavia.

SALES CURVES GO UP

● Sell Permutit Water Conditioning, and watch your sales curve go up! All of your old customers are prospects; sell them again, and make a second profit.

● There is no trade-in problem. Sells every month of the year. Not competitive with your other lines. Can be sold under FHA terms.

● You can demonstrate in the home how water conditioning aids beauty, protects health, assures cleanliness, and saves time, labor, and money. And your story to the housewife is backed up by national advertising; newspaper advertising, smashing direct mail and a powerful presentation. Free sales training course.

DISTRIBUTORS: Territories are being closed daily, but some few are left. Send at once for full particulars. Write, or use coupon if you prefer.

THE PERMUTIT COMPANY
Room 723, 330 West 42nd St.
New York City

Please send me, without obligation, complete details of exclusive distributor privileges for Permutit in my territory.

Company .....

Address ..... City .....

Signed by .....

N. Y. and Pennsylvania Lead in Household Sales in May

The following report of household refrigerator sales during May, 1936, was issued by the Refrigeration Division of the National Electrical Manufacturers Association and represents sales by 15 manufacturers.

State and Territories	Quantity of Household Low Sides
Alabama	2,680
Arizona	350
Arkansas	1,524
California	13,508
Colorado	2,355
Connecticut	5,268
Delaware	592
Dist. of Columbia	2,441
Florida	2,282
Georgia	6,046
Idaho	1,083
Illinois	28,406
Indiana	9,117
Iowa	4,922
Kansas	3,108
Kentucky	4,459
Louisiana	2,256
Maine	1,429
Maryland	4,142
Massachusetts	11,382
Michigan	21,112
Minnesota	4,639
Mississippi	1,363
Missouiri	8,622
Montana	1,190
Nebraska	2,793
Nevada	236
New Hampshire	1,378
New Jersey	10,617
New Mexico	523
New York	31,237
North Carolina	6,803
North Dakota	604
Ohio	23,507
Oklahoma	2,255
Oregon	2,385
Pennsylvania	30,631
Rhode Island	1,480
South Carolina	3,146
South Dakota	709
Tennessee	4,201
Texas	8,292
Utah	1,589
Vermont	895
Virginia	5,770
Washington	3,362
West Virginia	6,021
Wisconsin	6,451
Wyoming	357
Total United States	**299,518**
Canada	15,315
Other Foreign (Including U. S. Possessions)	15,315
Total For World	**320,137**

At the World Congress Dinner

Dinner of the Seventh International Congress of Refrigeration, at The Hague, Holland. Sharp eyes may pick out Editor George Taubeneck about tenth from the front at the left side of the table. Across from him (leaning forward) is Lord Dudley Gordon of J. & E. Hall, Ltd., English manufacturer. Sixth from the front at the right side of the table (partly obscured) is J. B. Farish of York-Shipley, Ltd., London.

Westinghouse Holds 1-Day Sales Drive

(Concluded from Page 1, Column 2)

Webster Hall, and closed with a second meeting at 11 p.m. at which final reports were made and results of the drive announced.

At the "curtain-raiser" breakfast meeting, the salesmen were addressed by P. Y. Danley, manager of Westinghouse' refrigeration department; J. J. O'Donnell, central sales manager; J. E. Hugo, central promotion manager, and "Sam" Vining, department store sales manager.

Helping the salesmen in their work Tuesday was an all-day series of radio spot announcements at half-hour intervals over station WWJ. First public announcement of the sale was made in a two-color full page advertisement in the June 29 *Detroit Times*.

To add public interest and make sales easier, every person purchasing a Westinghouse refrigerator on June 30 was allowed to enter a "last-line" limerick contest, the winner to receive the refrigerator of his or her choice free. Dealer and salesmen who sold the refrigerator to the prize-winner received their full commission on the deal.

Staged ostensibly as a one-day sale, the drive was extended through July 4, and a second refrigerator awarded in another limerick contest during that period. Original terms applied, but the salesmen, who were eligible for merchandise awards on the basis of their sales during the one-day drive, received nothing extra on sales made during the second period.

First announcement of the drive to dealers and salesmen was made in a "teaser" postcard mailed last Friday. The card urged salesmen to be prepared for an event of major importance on Tuesday, June 30, and indicated that it had something to do with refrigeration.

Second message to salesmen was delivered by Western Union messenger on Sunday morning, and contained, in addition to advance notice of the drive, a copy of the *Detroit Times* advertisement. Another message, in Monday's regular mail, urged salesmen not to miss the Tuesday morning breakfast meeting, and gave them additional facts about the salesmen's prize awards.

Dealers received full details of the drive in a letter reaching them Tuesday morning. The limerick contest for customers was explained, and dealers urged to report their orders as fast as they were received, giving the name of the salesmen each time, so that he might be credited in the prize contest.

Winners of sales awards were determined in a drawing made at the round-up meeting at Hotel Webster Hall at 11 o'clock that night. Every salesman at the breakfast meeting was given one chance; for every sale during the day he received three chances, if the value of the order was under $175, and five chances if it exceeded that figure. In this way, salesmen selling the most refrigerators received the most chances.

Six prizes were awarded: (1) an ED-60 Westinghouse refrigerator; (2) a $69.95 washer; (3) a $33.95 vacuum cleaner; (4) a $23.95 roaster; (5) a $10.95 fan; and (6) an $8.95 electric iron.

Limerick cards were turned in to the distributor's office as fast as sales were made, to avoid a last-minute rush. Winner was selected before 11 p.m., and the result announced over Station WWJ at 11:15.

726 Refrigerators Are Sold During Spring Show at San Antonio

SAN ANTONIO, Tex.—Sales of 650 electric refrigerators, 76 gas refrigerators, and 569 other gas and electric appliances, or $178,000 worth of appliances, were reported at the Spring Refrigeration Show and Home Appliance Fair here.

Eight local distributors and 26 dealers and their salesmen cooperated with the utility in staging the exposition.

Other appliances sold at the show were: 186 gas ranges, 174 radios, 155 washing machines, 10 ironers, and 44 miscellaneous appliances including vacuum cleaners, sewing machines, and food mixers.

Goldstein Conducts School For Crosley Dealers

PITTSBURGH—To educate retail salesmen in the details of their product, Harold W. Goldstein, president of Anchor Lite Appliance Co., Crosley distributor here, made a personal tour of the territory, sponsoring educational meetings at accessible locations.

In every center of the Anchor Lite territory, Mr. Goldstein reported, a maximum attendance saw a Crosley refrigerator completely disassembled and the functions of each feature explained, and heard the safety, convenience, and other features of modern refrigeration explained to them.

28,514 Refrigerators Sold in Canada During 1935

OTTAWA—Sales of household electric refrigerators in the Dominion of Canada during 1935 totaled 28,514 units, an increase of 1,299 over the 27,215 sold during 1934, according to reports of manufacturers made to *Electrical Appliances and Supplies*, trade magazine.

No official sales statistics covering electrical appliances are released by the Dominion Bureau of Statistics. Last retail sales data issued by the Canadian government, in 1930's Census of Merchandising and Service Establishments, indicated that sales of electric and gas refrigerators during that year amounted to $3,725,000.

Sales statistics on refrigerators, made last year, cover only electrically-operated mechanical units, and show a total dollar volume of $5,775,320.

Last year's sales brought the total number of electric refrigerators in use in the Dominion to 207,998, it is estimated. Percentage of market saturation in the country is 13.3, based on the total number of wired homes in Canada, including farm lighting plants. On the same basis, the number of Canadian homes without an electric refrigerator is shown to be 1,350,772.

Electric range and water heater sales were also higher in 1935 than in the year previous, statistics gathered by the magazine show. Sales of electric ranges last year totaled 14,321, compared with 10,800 in 1934. Dollar volume of 1935 range sales was $1,981,331. Water sales went to 16,330, from a 1934 total of 10,885, with a dollar value of $108,678.

Washer and ironer sales, however, declined last year compared to 1934. Washer sales total was 65,434 units, for a dollar volume of $5,868,022, against a 1934 total of 69,800 units. Ironer sales slumped to 5,948, with a value of $505,064, against a 1934 total of 6,769 units.

Fairbanks-Morse Make Refinements in Radios

INDIANAPOLIS — Featuring such innovations as a "turret shielded chassis," a tone projector, and a new "semaphore dial," Fairbanks-Morse is introducing to the 1937 radio market a line of 17 a.c. and battery models, in a price range of from $29.95 to $149.95.

The "turret shielded chassis," it is claimed, shields out noise in the same manner that noise is shielded out of the radio engineers' screen room. The tone projector, a metal disc which covers the lower inside of the cabinet, is said to give greater baffle area, providing wider diffusion of tone and materially adding to the bass notes.

Large dials and a new and unique illuminated single band indicator were introduced in connection with the "Semaphore dial," which incorporates within the escutcheon the tone and voice controls.

PORCELAIN ENAMEL

● Dealers everywhere know that eye-appeal is one of the strongest selling points. Make certain the eye-appeal of your refrigerator lasts as long as the customer wants it to.

PORCELAIN ENAMEL INSTITUTE, INC.
612 NORTH MICHIGAN AVENUE, CHICAGO

PORCELAIN ENAMEL

AN ANNOUNCEMENT BY Coolerator!

of interest to live wires

Coolerator is interested in establishing more outlets among aggressive and financially sound refrigeration dealers. Until now, the entire output of two plants has been sold through the Ice Industry plus a few aggressive department stores and electrical dealers. Increased production facilities now make it possible to take on more dealers in certain territories to cooperate with our present outlets.

A REALLY NEW SALES STORY

With Coolerator, you have a really new and effective sales story. Air conditioned refrigeration with pure adequately washed air. Ice cubes in five minutes. Frozen desserts in 45 minutes. A refrigeration story that is without equal and that is backed by performance. By working with your local ice company, you have a constant source of prospects without ringing doorbells.

A LOW PRICE

A price one third to one half the price of mechanical refrigerators of like size and quality. Yet with Dulux finish on bonderized metal, with Dry Zero insulation plus modern style and beauty. Resale prices from $30.75 to $600, food chambers from 2½ to 50 cubic feet.

A GOOD PROFIT

The margin is in keeping with that of other refrigerators. And you keep your profit because service is practically eliminated, no machinery, no coils, no valves, no belts. Just constant carefree performance.

A MARKET UNTOUCHED

Coolerator not only enables you to reach the better homes with a new story, but you also get a chance at the business in the lower income brackets with safe credit experience.

A WAITING DEMAND THRU NATIONAL ADVERTISING

The demand has been and is continually being created through National Advertising in magazines like Saturday Evening Post and Colliers. You have a sales story to tie to that brings results. You sell them on ten days trial and they don't come back. No covered dishes, less drying out of foods—a perfect set-up in every way.

NO SERVICE PROBLEMS

Because there is no machinery, no coils, no valves, no gases, you have nothing to get out of order and require expensive service costs. You keep your profit once the sale is made.

The Last Word in Modern Refrigeration

ALMOST ANY REFRIGERATOR
will give you cold air but the new Air-Conditioned Coolerator gives you not only constantly cold, but also humidified, purified and circulated air. The result—foods stay fresh with their own natural flavor and juices. . . . . .

Try Coolerator 10 Days Free

Don't take our word for these facts—Coolerator costs less to buy and re-ice—Foods are full flavored, taste better, do not dry out—Covered dishes not needed, yet food flavors do not mingle—Make all of the clear ice cubes you want in only 5 minutes—Make your own test of these amazing facts, as thousands of other women have and you will not want to let your Coolerator out of your home.

STYLE — BEAUTY — PERFORMANCE

WRITE, WIRE OR PHONE

Write, wire or phone today for complete details and information with reference to your sales territory. A Coolerator representative will call on you promptly or at your convenience.

THE COOLERATOR COMPANY

DULUTH, MINNESOTA, U. S. A.

SOLD BY MORE THAN 3000 DEALERS IN THE U. S. A. AND 65 FOREIGN COUNTRIES

Cross-Examination of Grunow's Engineer On Firm's Advertising & Endorsement of Electric Refrigeration by Prominent Bacteriologists Mark FTC Hearing

(*Continued from Page 1, Column 5*)

magazines, periodicals, of a general circulation, and in advertising booklets and other advertising media, by use of false and misleading statements or representations, has falsely represented, directly and by implication and inference, among other things: . . ."

The Commission counsel then presented the booklet, "Why Ice is Best for Refrigeration," as Commission Exhibit No. 1, and as such it was entered. He stated that paragraph six would be central subject of the investigation.

Initial questioning of H. M. Butzloff, refrigeration superviser for Westinghouse Electric & Mfg. Co. in the Northwestern district, was to establish his complete background—early sales experience, and later, managerial and supervisory positions, in the electric refrigeration industry.

Butzloff Explains Distributor's Set-up

He was asked to explain the set up of a distributorship's operation, and the exact position which he occupied in it. Queried concerning the extent to which he had helped formulate the advertising program used by his company, he replied that it was prepared at, and issued mainly from the factory.

Trial attorney Welch then asked the witness if reports of complaints on conditions encountered in the field were brought directly to his attention. He said they were. Mr. Butzloff was then requested to state the extent to which the reports he has received have indicated sales resistance, created by companies selling ice refrigerators.

Tells of Effect of Booklet on Sales

"In the last two years it has been common for me to get reactions from dealers on competition from ice refrigerator companies," Mr. Butzloff answered. "I am thinking particularly of a section in Iowa where the wide circulation of certain booklets hurt our business very much.

When shown the booklet, entered as Commission Exhibit No. 1, Mr. Butzloff claimed that he had seen it before. He then explained that he had heard about it while making a survey of his dealers in the city of Des Moines, Iowa, where he recently went to investigate the conditions, since sales there were not up to par.

According to Mr. Butzloff's statements, both sales of Westinghouse dealers and those of competitive dealers in Des Moines showed a decrease of approximately 20% for the first 5½ months of this year, as against the corresponding period in 1935.

This was due, he declared, partly to a campaign in which the booklet, "Why Ice is Best for Refrigeration," was circulated in connection with a free-trial offer, by the Des Moines Ice & Coal Co., he believed.

Attempt to Have Sales Figures Stricken Out Overruled

Figures on comparative sales he obtained from conversations with Joe Shilling, commercial manager of the Des Moines Electric Light Co. whose word was based on dealer reports received by the power company.

In cross-examining the witness, trial attorney for the respondent questioned him concerning the source of his assertion that sales of both Westinghouse and competitive dealers in Des Moines were off for this year. He then asked to have the testimony regarding this statement stricken out, on the grounds that the dealers in their reports to the power company, or to Mr. Butzloff, were under no obligation to tell the truth. The objection was overruled.

Ritter Grilled on Refrigerants

Second witness called to testify in the case was Irving S. Ritter, supervisor of Westinghouse commercial refrigeration operations in the Northwestern territory.

Mr. Ritter was questioned on the refrigerants used in Westinghouse units, if they were toxic, what tests had been performed which would show that they were not harmful to the human system, and to explain the theory of mechanical operation of a Westinghouse electric refrigerator.

Tests mentioned by Mr. Ritter included one in which a steak was immersed in Freon, and then the meat was given to a dog who ate it without suffering harmful effects; second test was that of placing some of the refrigerant into a glass of water, and drinking it after the ice which was formed when the refrigerant was injected, had dissolved.

Test Procedure Explained

Emphasis in the direct examination of the witness was placed upon the number of connections in the Westinghouse refrigeration system, and the types of valves used at the connections, pressure under which units are tested, and when, chronologically, the test is made. He was questioned concerning the possibility of the refrigerant leaking out at connections in the assembled units.

He explained the components and characteristics of the two refrigerants used by Westinghouse in different type boxes which it manufactures. Further questioning was on the toxic effects which the refrigerant would have if it leaked out of the unit into the food compartment, and if it came in contact with food stored therein.

Charts and diagramatic sketches used by Mr. Ritter to illustrate his explanation of the mechanical story, were entered as commission exhibits by trial attorney Welch. Following trial examiner Keenan's brief questioning of the witness, the trial was adjourned until the morning of July 2.

Kenney Is Cross-Examined; Defense Enters Grunow Ad

In his direct examination of third witness, Mahlon Wesley Kenney, director of engineering for General Household Utilities, Wednesday morning, July 2, trial attorney Welch questioned Mr. Kenney first on his engineering background, and later asked him to explain the system of operation of a Grunow electric refrigerator.

Asked if he had performed tests to determine effects of the refrigerant used in a Grunow box, Mr. Kenney stated that quantities of the liquid were poured on the floor, that the liquid had been poured into customers' hands, and that he had taken some into his mouth. Fire tests were also mentioned.

Questioned on Test Methods

In the cross-examination, respondent attorney Franklin Raber questioned the witness as to the possibilities of the Grunow refrigerant escaping from the coils, and the effects if this happened. He also questioned the witness on pressure used in testing the units during and after they were assembled.

After questioning Mr. Kenney on facts relating to the mechanical operation and temperature controls in a Grunow, the Coolerator counsel showed the witness a copy of a booklet titled "Vital Facts On Cold Control," issued by General Household Utilities Co., and asked him if he had seen a copy of the booklet before. Mr. Kenney said that he had not.

'Not Consulted About Copy'

Next the cross-examiner showed Mr. Kenney a copy of the Grunow advertisement inserted in the May 27 issue of ELECTRIC REFRIGERATION NEWS, and asked if he had seen it before. The answer was in the affirmative. Following question was whether or not the Grunow engineer had been consulted about the copy before the advertisement was prepared.

"I was not consulted about it," he answered.

If he had not been consulted, respondent attorney Raber asked Mr. Kenney, then on what did the writer of the Grunow advertisement base his facts in the statements made in the copy. From tests compiled by the Underwriters' Laboratories, was Mr. Kenney's reply.

Denies Helping with Booklet

The witness was again questioned as to whether he had been consulted prior to the preparation of the Grunow booklet "Vital Facts About Cold Control." He said he hadn't. Then Attorney Franklin Raber said:

"Then Mr. Grunow didn't mean you when he said: "*Our engineers* have . . ." (reading opening sentences in the booklet).

"I guess he didn't," Mr. Kenney answered.

Trial attorney Welch then objected to further questioning of the witness on the booklet, on the grounds that he had stated that he had not seen, nor been consulted on the booklet's make-up. The objection was sustained.

Common Characteristics of Carrene

Again presenting the Grunow advertisement which appeared in the May 27 issue of ELECTRIC REFRIGERATION NEWS, the defense attorney read the second paragraph in the body of the copy, and asked the witness if he had been consulted when the statement quoted:

"Grunow alone has perfected a vacuum circulating system—no pressure to blow out weakened or corroded connections in old boxes— . . . Grunow alone uses the super-safe refrigerant, Carrene—non-inflammable, non-explosive, non-suffocating?" was being prepared.

"I was not consulted. But those are common characteristics of Carrene, and those things have been known around our office for the past three or four years," Mr. Kenney answered.

Commission trial attorney Welch then objected to any further questioning of the witness on the statements quoted from the advertisement by Attorney Raber, on the grounds that the witness had stated that he was not consulted. Trial examiner Keenan sustained the objection.

Raber next asked Mr. Kenney if he did not know what manufacturing companies were referred to in the opening part of the paragraph in question, specifying the words: "gas-filled homes to send people gasping into the street."

Assisted with Earlier Advertisements

The witness said that he did not know. Qualifying his answer, he then said while he had not been consulted prior to the preparation of this particular Grunow advertisement, still the "*meat*" of the copy in the advertisement was very much similar to that which was used by the company in its advertising of three or four years ago (approximately 1933, he said), at which time he had been consulted before the copy was written.

Queried on this point, Mr. Kenney was asked on which parts of the copy he had been consulted three or four years ago. His answer was on the words: "non-inflammable, non-explosive, non-suffocating." He stated that they were characteristics of Carrene which had not changed.

Respondent counsel Raber then asked that the Grunow advertisement be entered as Respondent Exhibit No. 1.

Entered as Respondent's Exhibit

Welch objected. The objection was overruled on the grounds that Mr. Kenney had testified that the *meat* of the copy in the advertisement mentioned was similar to that used in previous advertisements, about which he *had* been consulted; the copy was entered as respondent exhibit No. 1.

Asking the witness to demonstrate practical tests with the Grunow refrigerant, was the initial step in the FTC attorney's re-direct examination, which took place immediately following noon adjournment.

Constantine Reports Test Results

Arthur Robert Constantine, of General Household Utilities Co. engineering department, fourth witness who testified, produced the record sheets and data charts regarding temperatures of 40-45° F. maintained in a Grunow refrigerator, in answer to a question of Attorney Welch.

The tests, he stated, were made in August, 1935, under his direct supervision, prior to the Grunow organization placing a bid with the Government for the contract to supply a number of boxes for Government use. Boxes were tested in rooms with predetermined temperatures of 80°, 90°, and 110°.

He was questioned as to the pressure applied in testing units, when it was applied; the nature of connections used in assembling condenser, compressor, evaporator, etc.

Heat Load Test Procedure

In the cross-examination the witness was closely questioned as to a statement which he made to the effect that a 25 watt (actual figure was 31.4, he qualified) bulb was placed in one of boxes during the test, to represent the average heat load placed upon the average household unit when food was stored.

Mr. Constantine declared that it was a standard method of measuring the heat load. He said also that he was one of a group of five refrigerator manufacturers' commercial engineers who met with the Department of Interior engineers to determine the specifications on average heat load measurements.

Following the cross examination in which Mr. Constantine was minutely questioned on the mechanical operation, and other mechanical questions, the trial was adjourned till the following morning.

Low Temperatures of Prime Importance, Scientists Testify

Opening the third day session of the hearing, Dr. Alexander A. Day, head of the department of bacteriology at Northwestern university, was called as first witness.

Asked to define the principle purpose of refrigeration, Dr. Day said that it was the preservation of food, which, he stated, depended on keeping down the bacterial growth in the food.

40° to 45° Temperature Best

Follow up question was what refrigerator temperature would, in his opinion, best produce that result? His answer was:

"As far below the optimum as possible." He defined optimum as meaning a temperature between 45 and 50° F., preferably from 40° to 45°.

Attorney Welch next asked the witness what safety factor (in regard to bacterial growth) would be obtained at a temperature of 50°.

"I can't really answer that. One must differentiate between germicidal and inhibitory states of bacterial growth," the doctor said. "50 degrees is a temperature which, in my opinion, is not sufficiently low to refrigerate foods properly."

"In your opinion is a temperature of from 40 to 45° more satisfactory," the commission attorney questioned. The answer was in the affirmative.

Queried as to what would happen (in regard to bacterial growth) if the temperature in the refrigerator got over 50 degrees, Dr. Day said: "Then some of the saprophytic bacteria would start to multiply, and attack the foods."

"Which, in your opinion," asked the commission attorney, "is more important—low dehydration or low bacterial activity?"

"Low bacterial activity," Dr. Day answered.

Exact Temperature Not Determined

Quoting from paragraph six in the complaint, the attorney asked Dr. Day his opinion on the statement:

That a temperature of from 45 to 50 degrees is the established or required standard temperature necessary to be obtained in all types of refrigerators for the most satisfactory preservation of foods.

"I couldn't say because the exact temperature has not been determined," he answered.

Questioned as to his opinion on which temperature would be the best insofar as it would affect first, the appearance and taste of foods stored in the refrigerator, and second as it would affect the bacterial growth, the doctor's answer to the first question was:

"A temperature of 45° or thereabouts"; for the second he said "Below 45 degrees."

Wouldn't Harm Nutritive Quality

When the commission attorney asked Dr. Day whether or not, in his opinion, electric refrigeration would disturb the natural construction of foods, he answered that it would not to the extent of interfering with the nutritive qualities of the food.

Other testimony was obtained in the following order:

Q. Assuming that there is dehydration in a refrigerator, to what extent, if any, would it disturb the natural composition of the food in the refrigerator.

A. To a very slight degree; only in taking away free water.

Q. Then by dehydration, only free water is taken away from the food?

The answer was in the affirmative.

Free Water Not Necessary

He testified that in his opinion, the chemical constitutents of the food would not be disturbed. He reiterated this opinion when questioned as to whether or not free water was essential to food in its natural state, answering that it is not because the human body can make up the required water from other sources.

Q. To what extent, if any, are gases formed by bacterial action given off from food stored in an electric refrigerator?

Before answering, Dr. Day stipulated that he would answer the question from two angles, first his own experience and observation with the electric refrigerator in his home, and second, speaking as a bacteriology expert.

From his personal observation he said that he believed no gases were given off. They would be detected, he explained, by smell or taste, and that he had never noticed any disagreeable odors in his electric refrigerator.

Bacteria Activity Small

From the scientific point of view, he said:

"With a temperature properly maintained between 40 and 45° the amount of bacterial activity would be very small. That is, any bacteria that might be present would be slowed down in activity."

"Their action," he added, "would not be enough to produce harmful results. That temperature is sufficiently low to inhibit to a great extent, bacterial growth."

Liberation of gases from foods stored in the refrigerator is controlled by the bacterial activity, he said. Chief gases which might be liberated are carbon dioxide and hydrogen—neither of which in the quantities which would be given off in an electric refrigerator would be harmful, in the doctor's opinion.

Commission attorney Welch completed his direct-examination of the witness with the question:

Is sulphur dioxide formed in a refrigerator at controlled temperature below 50°?

A. So far as I know, it isn't.

Defines Types of Bacteria

Attorney Raber in opening his cross-examination asked the witness to explain what he meant by pathogenic and saprophytic in differentiating between bacterial states. The answer was that pathogenic refers to bacteria which live off of and injure living matter; saprophytic, to bacteria which live on dead matter.

"There's no particular temperature which could be considered as the dead line in the growth of bacteria, is there?" asked Attorney Raber.

A. No, because bacteria have varied ranges at which they grow. Their growth is influenced by various conditions, as, the type of matter upon which they light, or the media, the temperature most conducive to their growth, etc.

(*Concluded on Page 5, Column 1*)

Bacteriologist Says Electric Refrigeration Is Best to Preserve Food Because It Holds Low, Constant Temperatures

(*Concluded from Page 4, Column 5*)

Q. Within a reasonable amount of time, at a maintained temperature of 50°, food placed in any refrigerator wouldn't spoil, would it?

Dr. Day's answer was that he would place 40 to 45° as a practical temperature at which food is safely preserved.

The witness was next questioned by Trial Examiner Keenan, who asked if he had had experience with both ice box and electric refrigeration. He stated that the hospital used ice boxes from 1912 until 1926, from which time it has been using a mechanical system.

Q. Could you tell me if a constant temperature of between 45 to 50° was maintained in the ice box?

A. We never felt that we had a constant temperature in the ice boxes.

Q. Is it possible to maintain a constant temperature in the refrigerator?

A. With our present system (a brine system), yes, although I have looked at the temperature gauge and found the temperature around 45°.

Asked if he knew of any examples of the brine hurting the matter stored in the refrigerator, Dr. Day said that this happened once to his knowledge, and that was due to a technical mistake.

Laboratory Box Temperatures Varied No More than 1° F.

Testimony of Dr. Gail M. Dack, professor of medical bacteriology and head of that department at the University of Chicago, who has been studying food poisons and their effects for the past 14 years, completed the commission investigation of witnesses in the Chicago trial hearing.

His testimony as to the correct temperature for food preservation considering bacterial growth harmful to the preservation, was to the effect that in his laboratory work the doctor and his staff liked to keep the temperature in laboratory refrigerators "around 40°."

Low Bacterial Action Most Important

Dr. Dack testified that he had recently conducted a test to determine temperatures maintained in a laboratory electric refrigerator. The test was of a week's duration, and the result, he stated, was that the box temperature averaged 40°, and did not vary more than 1° F. during the week's test.

His opinion as to low bacterial action being more important than low dehydration coincided with that of Dr. Day, as did his statement that at a temperature of 50 degrees bacterial activity is reduced somewhat, but that the lower refrigerating temperature could be obtained, the lower would be the amount of bacterial activity.

The commission representative then asked the witness to state his opinion on the statement that a temperature of 50° has been determined by doctors and food experts to be the standard temperature necessary to be obtained in all types of refrigerators, for the most satisfactory preservation of foods.

Dr. Dack answered: "No, that is not true. There are some foods which are best preserved when they are frozen. You can't generalize like that, it depends upon the type of foods in question, since different foods require different temperatures.

Stating that to his knowledge electric refrigeration does not in any way disturb the natural construction of the material stored, Dr. Dack was asked what would happen to the material stored in his laboratory refrigerators if the refrigeration did disturb the construction of the material.

His answer was that the media stored would be ruined.

Food Value Not Destroyed by Dehydration

Queried on dehydration of foods stored in an electric box, Dr. Dack's answers again conformed with those given by Dr. Day—that the nutritional value of foods stored was not impaired by dehydration, and that the amount of water given off by dehydration was of such small quantity as to be of no importance, that neither sulphur dioxide nor chlorine are given off in the box, and that, while carbon dioxide and hydrogen might be given off, the quantities liberated would be so small as to be negligible.

He further added that dehydration, if carried far enough, preserves food.

Next question put to the witness concerned the statement (from the complaint) "That the gelatinous matter found in drain pipes of non-mechanical refrigerators is formed from gases emanating from food contained therein being absorbed and carried away by the water from the melting ice, and that ice cubes frozen in an electric refrigerator contain the same matter as is claimed to be contained in the drain pipe of a non-mechanical refrigerator.

"I don't feel that there is any scientific basis for that statement," stated Dr. Dack.

Matter Not Similar

Questioned in more detail on this point, the doctor first stated that his laboratory testing work had included tests of the matter in the drain pipes of an ice box. His direct answer to the question was:

"I have never seen it. We have at various times, as part of our testing work, melted and tested the matter in ice cubes, and by repeated melting and freezing, we have never found that the matter is similar to that found in the drain pipes of a non-mechanical refrigerator."

He then explained that the gelatinous matter found in the drain pipe consisted of things which had been spilled, dirt that might have collected, residue of materials contained in the ice cake itself, etc.

"Now that," he added, "wouldn't be obtained in the one enclosed compartment of an electric refrigerator."

Describes Material Stored in Refrigerator

Dr. Dack was then turned over to Attorney Raber for cross-examination. Asked first about the nature of material kept in the college laboratory refrigerators, the doctor enumerated specimens, cultures, media, and food stuffs.

Attorney Raber then put the question: "Is that the same type of material as you would have in a household electric refrigerator?"

A. A good amount of it is. You see we have a bunch of monkeys over there which we feed milk, fruits, etc.

Content of other testimony brought out by Attorney Raber's cross-examination, was as follows:

In a refrigerator in which a temperature of 50° is maintained over a 24 hour period, would the bacterial growth in milk stored be sufficient to make the milk unfit for use?

Depends on Previous Activity

It would depend, Dr. Dack answered, upon the bacterial activity in the milk previous to when it was placed in the box.

Is this true at a temperature of from 45-50°?

That it was true, except that there would be less bacterial activity if the 45-50° temperature were maintained, was the doctor's answer.

"There is more food decomposition in a box in which a higher temperature exists, than in one in which a low temperature is maintained," he added.

Q. If you spill anything in a mechanical box, what happens to it?

A. It stays there until you clean it out.

Q. Are bacteria present?

A. Yes. Bacteria are present everywhere. But in an ice box the possibilities of their growth are greater because there is more nutrition in the matter contained in the drain pipes.

Electric Refrigeration Best

On further questioning, the doctor stated that while ice cubes do also have bacteria, that they would not be the same kind as those found in the drain pipe of an ice box, and that they will not, generally speaking, multiply rapidly on ice cubes, because they must have the proper nutritive conditions under which to grow or to multiply.

At the completion of the cross-examination, Trial Examiner Keenan asked Dr. Dack which, in his opinion was the best type of refrigeration, to which the doctor responded that he considered electric refrigeration the better of the two because lowered refrigerating temperatures retard bacterial growth.

Federal trade commission attorney Welch then moved that the trial be adjourned until July 9, when a hearing of witnesses in Duluth, Minn., would be held.

Leonard Forms 'Crest Club' For Leading Salesmen

DETROIT — Leonard Refrigerator Co. recently inaugurated the "Crest Club" with the object of raising standards of salesmanship and rewarding individual selling achievements during the calendar year, reports R. I. Petrie, sales manager.

To qualify for the awards, salesmen must satisfactorily answer 50 questions set forth in an application-questionnaire on various aspects of electric refrigeration and food preservation and handling, Mr. Petrie states.

Sales Jump for Denver Dealer after Store Is Remodeled

DENVER — Preliminaries to the bang-up summer selling season anticipated by the Cahn-Forster Electric & Refrigerator Co., here, which included taking on a new line, remodeling its show room, and adding four new salesmen, provided the correct set-up for increased sales and for obtaining a steadily mounting prospect list, according to sales manager C. B. Griffith.

At a cost of approximately $500, the company's quarters were altered to provide remodeled offices, and two new display booths, one of which is a demonstration room containing refrigerators plugged in for operation. The other booth is a closing room, equipped with comfortable chairs, a desk, and a supply of manufacturer's literature.

Brown fibre board, with chrome metal trim, is used in the base surrounding the new display booths, while upper wall partitions are of glass.

Tie-in with a local newspaper which recently sponsored a three-day cooking school, held in the Denver city auditorium, enabled the appliance dealer to obtain a list of approximately 1,000 new prospects, many of whom have already purchased electric refrigerators, Mr. Griffith states.

Guests at the cooking school were requested to fill in questionnaire blanks asking if they were interested in buying a refrigerator, if they intended to buy this year, and if they wished a salesman to call with advertising on electric refrigeration.

The company handles Crosley, Norge, and Frigidaire. Two of the new salesmen, R. M. McGintie and Jack Slagle, are from the Frigidaire training school.

Belsey Extends Bi-Monthly Menu Service With Publication of Booklets

LOS ANGELES—Success of the bi-monthly menu service which Bess Meals, home service director of the George Belsey Co., General Electric distributor here, has conducted for the past four years, has led to the addition of two activities of a similar type to her present home service program.

A series of booklets to be published every two months, featuring menus, recipes, shopping lists, and editorial material on each of the G-E appliances, is one of the new projects. These booklets (the first of which is now being prepared) are designed to teach users how to get better service from their major appliances, and to interest them in the purchase of additional equipment.

Weekly Newspaper Column

Writing a weekly column which will be supplied to the 60 newspapers published throughout the distributorship's territory is the second activity. Centered chiefly on food topics, the column will contain no advertising other than a credit paragraph stating that Bess Meals is head of the home service work of the Southern California G-E dealers, and naming the local dealer.

This identification, it is expected, will serve to increase dealer floor traffic, as has the menu service in which bulletins can be obtained only by calling at the dealer's showroom. Each bulletin contains a complete menu for a family of four persons, with recipes, a market order, a list of current food prices, and instructional advertising copy on G-E appliances.

Conducting large group demonstrations in connection with the film "Three Women," is another of the leading divisions of Bess Meals home service work schedule. Given before audiences of from 100 to 500 women, the demonstrations of this kind throughout the latter part of 1935 proved highly successful, and led to many direct sales, the home service director states.

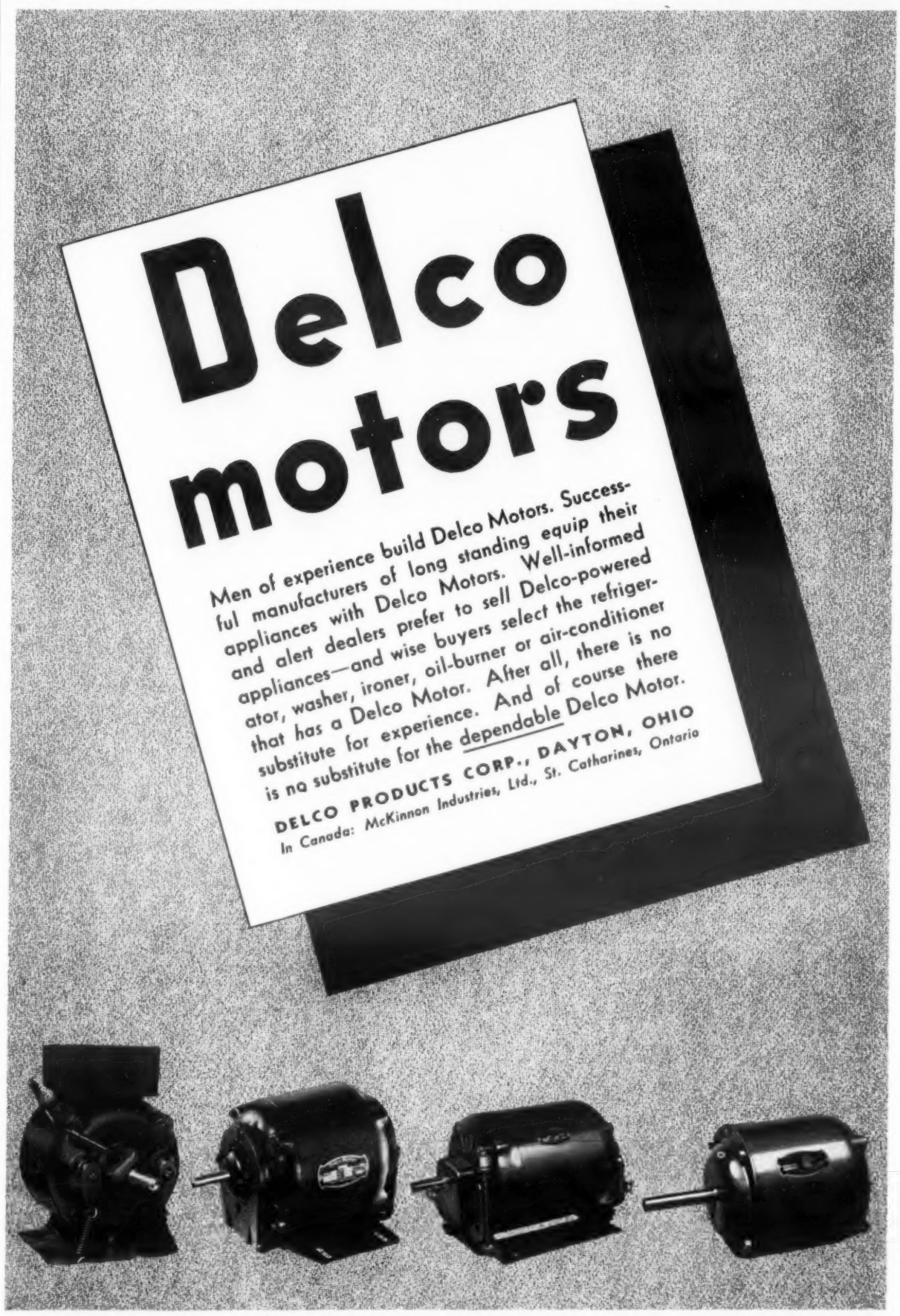
In putting on a large group demonstration, the home service director follows a special program in which she first gives a cookery demonstration, stressing the major selling points of the range, refrigerator, dishwasher, and other appliances, then shows the film, and concludes with a short talk on the food prepared, and a summary of the selling points previously set up.

Demonstrations for Prospects

Directly tying in with the work of its sales organization, two prospect sales-closing-demonstrations are held each week in the electric kitchen of the George Belsey Co. From 6 to 15 women may be present at schools of this type. They are invited by the salesmen, who sometimes accompany their prospects.

The results of sales-closing-demonstrations have been so satisfactory that the company plans to extend this work by arranging to have Bess Meals' assistant conduct regular demonstrations one a month in each store in the distributor territory which is equipped with a complete G-E kitchen connected up for demonstration.

Besides conducting the regular menu service, preparing material for the new Owner's booklet (titled "Your Kitchen,") and copy for her newspaper column, Bess Meals' work also includes courses in salesmen training and routine contact and educational field work.


Delco
motors
Men of experience build Delco Motors. Successful manufacturers of long standing equip their appliances with Delco Motors. Well-informed and alert dealers prefer to sell Delco-powered appliances—and wise buyers select the refrigerator, washer, ironer, oil-burner or air-conditioner that has a Delco Motor. After all, there is no substitute for experience. And of course there is no substitute for the dependable Delco Motor.
DELCO PRODUCTS CORP., DAYTON, OHIO
In Canada: McKinnon Industries, Ltd., St. Catharines, Ontario

Around the World

With George F. Taubeneck

On page 1 of this issue is a news report of the International Congress of Refrigeration, held at The Hague June 16 to 27, by Editor George F. Taubeneck.

The picture of the Congress, also on page 1, conveys an idea of the size of the assemblage, and the formal atmosphere in which the sessions were conducted.

In a letter just received, George indicates that he met some very interesting personalities, and immensely enjoyed his experiences at the Congress. No doubt he will give many interesting sidelights on the delegates and the sessions later on in his travelog.

The most recent cablegrams from George came from Stockholm and Berlin. We expect to hear from him in London soon. He will arrive in Detroit, completing his around-the-world trip, about the first of August.

No Romance (or Sanitation) On the Road to Mandalay

Penang

Like Singapore, Penang is an island. It's about 15 miles long and nine across, with an area of little more than 100 square miles.

All import business—such as refrigeration—is handled from Singapore. Its chief commercial importance is as a port for the trans-shipment of rubber, copra and tin from Malaya, and for food products from Sumatra. Population is about 375,000.

Penang is a genuine tropical isle, with scads of tall palm trees everywhere, verdant hills, tangled underbrush, dewy mornings, vitality-sapped Europeans, and herds of dark-skinned natives.

From the time one catches first sight of Penang on the horizon, through the entrance into the lovely landlocked harbor, and into the well-shaded roads in the interior, one is struck by the rich beauty of this spot. Of all the tropical isles I've touched on this trip, Penang appealed most of all to the writer.

Principal city is known officially as George Town, to the natives as Tanjong, and to all white people simply as Penang.

Among the Things To See are some Chinese temples, including one devoted to snake worship, where flocks of doped reptiles lie coiled on brass plates, with joss sticks burning before them.

Also there is an extensive botanical garden, and the view from Penang Hills, which may be reached via an electrified funicular railway which climbs most precipitously.

But chiefly you'll be pleased with the drives around and through the island, on which you catch glimpses of this continuous native village through thick palm clusters and flower bowers, and where you have to be careful not to run over the monkeys.

* * *

Straits Settlements

In addition to Singapore and Penang Islands, the Straits Settlements include the old European colonies of Malacca, Dindings, and Province Wellesley, as well as the island of Labuan, the Cocos Islands, and Christmas Island.

These rather scattered units total 1,600 square miles, and have a population of about 1,120,000. They are governed by a crown-appointed Governor, who lives in Singapore, an executive council and a legislative council. On the executive council are the military chief, the colonial secretary, attorney general, treasurer, engineer, and resident councillors of Penang and Malacca.

This colony is really but a small part of British Malaya, although all the natural riches of that verdant territory are fed through the Straits Settlements.

Other Malayan principalities include the Sultanate of Johore, which we have mentioned previously, the Federated Malay States (Perak, Selangor, Negri Sembilan, and Pahang), and the Sultanates of Kedah, Perlis, Trengganu, and Kelantan. The five Sultanates are called the Unfederated Malay States.

Johore and Trengganu yield large quantities of iron and manganese ore, which are mined and exported by Japanese concessionaires. Kelantan is said to have undeveloped gold deposits. Kedah is one great rice field. Pahang produces gold. Selangor is noted for its rubber plantations, for its tin, and for its lively city (capital of the Federated Malay States) Kuala Lumpur. Johore has rubber, too, and Perak. The latter state also has rich tin deposits, and tungsten.

With the indefatigable Mr. Lee as a guide, I visited a Johore rubber plantation. This one, like most of its kind, had been reclaimed—by axe and tractor—from the jungle. After planting rubber trees, the owners must wait five years for them to become productive.

When ready for tapping, the trees are ringed with a sharp knife. Each day comes a new ring. All day and night the latex (sap) drips from the incision into a cup fixed beneath. Next morning the cup is emptied, the old ring cleaned and prepared for healing, and the new ring cut.

Latex is poured into tanks, and water and coagulating chemicals added. From these tanks the raw rubber is removed and rolled into sheets through a device which looks like a wringer on a clothes-washing machine.

The sheets are dried in the sun, and then smoked, just as if they were ham or bacon. When cured, they are shipped to Singapore for export. We collected samples of the various stages of rubber collection and preparation, to keep as souvenirs.

Chinese, Malay, and Hindu labor is used on these plantations. They live on the plantations, right in the midst of their daily work, and are cared for by the plantation owners in a highly paternal fashion. In a very practical way the owner is the king and chief magistrate for these coolies, in addition to being their employer, banker, and storekeeper.

Goodbye to Singapore

T. G. Cain, manager of Gramophone Co., HMV distributor in Singapore, bids George Taubeneck goodbye as he leaves for Rangoon aboard the Karagola.

La Cucuracha

Having overstepped my budget in Java and Singapore I felt constrained to save some money, and travelled second class from Singapore to Rangoon on the *Karagola*, and from Rangoon to Calcutta on the *Ekma*.

Friends like Mr. Cain of the Gramophone Co. assured me that I wouldn't like it. Terrible chow, they told me, and it seems that there were ants and cockroaches. Boy, were they right!

Dinner was served about an hour after the *Karagola* left Singapore's mast-filled harbor. First plate set in front of me had a slice of bread on it. And ants. About a gross, I judged in a hasty glance. Even if the food had been food I wouldn't have liked it after that.

Within three hours the ants had invaded every corner of every piece of luggage, and they were followed, in lesser numbers and not so efficiently, by the cockroaches. Mostly these cockroaches were little fellows; but in the two-by-four lounge where I did my daily stint of typing there were three whoppers, whom we dubbed Archy, Mehitabel, and the Old Man.

After days of trying, I finally landed the Old Man. He measured 2½ inches from stem to stern.

* * *

Black Hole of Calcutta

There was just one other white second class passenger, a Pilgrim Holiness missionary just come from China, and bound for Benares.

A big, booming man, the kind who used to lead the singing in revival meetings back home, he ate heartily, and with seeming relish. Everything seemed good to this man, except the writer's habit of smoking. Of the seven other second class passangers, four were Mohammedans and three were Brahmins, while third class there must have been 400 Hindus of various faiths.

With all these "heathens" to work on, only my smoking stirred his apostolic fervor. He also had the storybook reformer's insatiable curiosity about vice, and loved to recount stories of his experiences in burlesque shows, beer gardens, and other dens of wickedness. With gleaming glee he was looking forward to "the haunts of Satan" in Paris.

At our table was a high type of Hindu, a magistrate in His Majesty's service, who turned out to be a real friend and an inexhaustible source of information about India, its peoples, and its religions.

An incident to illustrate the two points of view: The missionary loudly boasted at one meal that he had never touched any woman but his wife. The Hindu was amazed that he admitted it!

The third-class passengers brought their own food, and slept on the bare decks in a vast, tightly packed, sweating mass. In the daytime they played cards, talked, coughed and spit, and prayed. Especially did the Mohammedans pray; and at sunset, a whole troupe of them squatted on their prayer rugs in regular rows behind a leader, and touched their noses to the mats in unison (looked like good exercise, anyway).

Under the sponsorship of our friend, Mr. HARBANS SINGH of Lahore, I got to meet and talk with many of these Hindus, and it was a most enlightening experience. (I'll pass on some of this knowledge when I write about India.)

Mr. Singh was also a fellow passenger on the *Ekma*, from Rangoon to Calcutta, and again he was most helpful in getting me around among the shy Hindus. On the *Ekma* these steerage passengers were unbelievably crowded—three decks of them, the bottom two layers having no chance to see daylight from the beginning to the end of the three-day trip.

The lowest deck of sweating Indians—with hundreds of near-naked humans packed tightly into an unventilated space, at 110 degrees Fahrenheit, the atmosphere wasn't exactly perfumed—was surely a modern counterpart of the Black Hole of Calcutta.

* * *

Rangoon

It was Burmese New Year when I arrived in sweltering Rangoon. That was both fortunate and unfortunate; it meant that business houses would be closed, their executives away on holidays, and hence no information on the industry.

The good fortune embraced the opportunity of seeing the Burmese people in holiday mood and attire, and uninterrupted time to see the town and country, and study its extraordinary people.

New Year in Burma is a lot of fun. It lasts for five days, and is celebrated by feasting, worshipping in the golden pagodas, and *water-throwing*.

Now this ancient custom of dousing people with water isn't nearly so dangerous to life, limb, and optics as our own fireworks, but it seems to make the non-celebrants much more angry than firecrackers would.

Fact is, the municipality of Rangoon had passed an ordinance a few days previous prohibiting water-throwing on Europeans; but such was the wrath of the Burmese at this affront to their traditions that rumblings of revolt were heard—and heeded. The ordinance was not enforced.

One of the swellest sets of pictures I have obtained on this trip record the tableau of four Burmese boys who had somehow contrived to steal a fire-hose, and hook it to a hydrant. With this they were spraying occupants of passing motor vehicles. A bus stopped at the intersection, the passengers were drenched, and a mad-as-a-wet-rooster old Scotchman with dripping white whiskers got out to expostulate with the boys. What resulted then was funnier than any of the old Mack Sennett or Hal Roach comedies.

* * *

H. M. Dingemans

My guide in Rangoon and sole representative of the industry I met—was a quiet, emotionless Dutchman, H. M. Dingemans of the Trading Co. (late Hegt. & Co., Ltd.) distributors of HMV refrigerators and gramophones, Phillips radios, motion picture apparatus, and heavy machinery.

The Trading Co. is a Dutch firm, and has only recently taken on the sale of refrigerators; so Mr. Dingemans, who was kind enough to forego his holiday so that he could show me around, had practically no data on the refrigeration business in Burma.

It was his belief, however, that Frigidaire had obtained most of the meagre business which had been done so far, and Kelvinator the rest. The sealed unit machines apparently have made comparatively little headway in this strange country.

Sale of Phillips radios and HMV gramophones and records, however, has been brisk in the last few years. Even the impecunious natives seem able to dig up the wherewithal for a cheap portable gramophone (the kind universally used in the East), and records of native nasal-toned music.

Phillips radios, it might be worth noting here, seem to outsell American makes in Java, Malaya, Burma and possibly elsewhere in the East. They are made in Holland. Of the American radios, RCA and Philco are far in the lead.

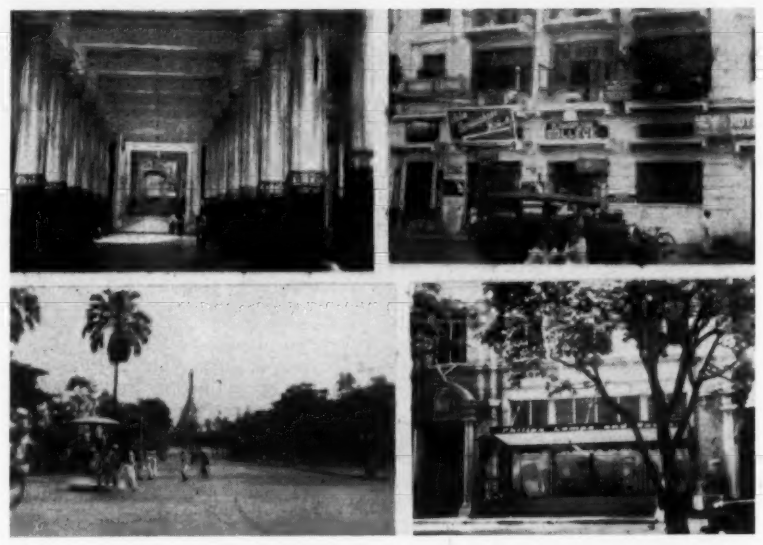
* * *

Salute the Sahib

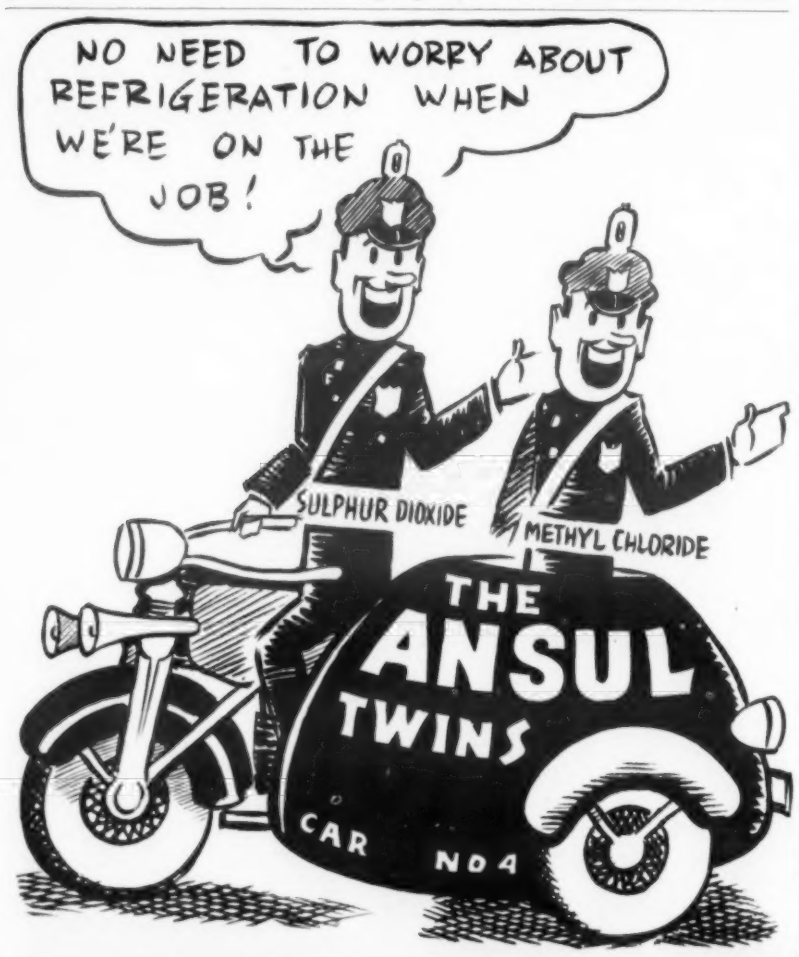
Mr. Dingemans took me to the capacious Trading Co. building to show me around, even though none of his

(Concluded on Page 7, Column 1)

Things to See in Rangoon

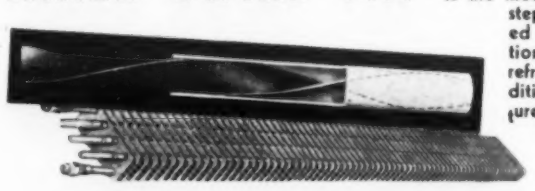


Upper left: The Shwe Dagon Pagoda, with the gold-leaf columns of its majestic approach glinting in the afternoon sunshine. Right: The Trading Co., Rangoon distributor for HMV refrigerators and gramophones, Phillips radios, movie equipment, and heavy machinery. Lower left: Rangoon street scene. Right: Another view of the spacious Trading company building.



ANSUL CHEMICAL COMPANY
MARINETTE » » » » » WISCONSIN

INNER SWIRL FIN is the most important advanced step ever made in extended surface coil construction. Equally good for refrigeration as for air conditioning. Detailed features in Catalog No. 336 . . . Have you a copy?



TRENTON AUTO RADIATOR WORKS
210 West 65th, N.Y.C. TRENTON, N.J. 5114 Liberty Ave., Pittsburgh, Pa.

Around the World

With George F. Taubeneck

(*Concluded from Page 6, Column 5*)

co-workers would be there; and such jumping to attention and saluting and obeisant service I have never seen before or since. You'd have thought Mr. Dingemans were General Pershing or Marshal Foch.

The saluters were Tamil Indians, who appear to do most of the labor in Burma. There were vast numbers of them at every door, on benches, and in corners, obviously just waiting to salute Mr. Dingemans and do his bidding.

They live on the roof of the building, and being neither Burmese nor affluent enough to go anywhere on this holiday, had nothing to do but come down to their usual posts and wait around.

* * *

Golden Pagodas

For tourists the chief attraction of Rangoon is the Shwe Dagon Pagoda, a splendiferous temple to Buddha which has a towering spire encased in gold leaf. It had been freshly gilded just before my arrival which, Mr. Dingemans told me, was a lucky thing.

Looking around at the other snaggle-toothed, moth-eaten pagodas which bob up behind every clump of bushes in Rangoon, one understood his meaning. A gilded spire is rather ghastly if neglected too long.

But the Shwe Dagon was dazzling, and shining in all its glory in the yellow Burmese sunlight. Not only is its spire gilded, but so are the mighty pillars of the majestic approach—which, if it were mere marble instead of gold-leaf-on-copper, would seem like a Greek temple on the Acropolis at Athens.

Mr. Dingemans drove up to a spot a good safe distance away from the Shwe Dagon parked, and let me make the inspection alone. In two minutes I knew why. The *smells* which haunt the pagoda and arise from the steaming flat of ground around the temple would sicken a rat. What the Shive Dagon pagoda needs most is a good-sized public comfort station.

* * *

Road to Mandalay

Judging from what I saw and heard during my brief visit, Burma is a land of Priests, Pagodas, Pigs, Petrol, Profiteers, Police, Parasols, and Prostitutes.

British soldiers and American mining engineers are my authorities for the statements that:

(1) Any Burmese man will sell his wife or daughter for a handful of small change.

(2) Burmese men will not work; hence they deserve to have their country drained of its natural resources by English capital, American engineers, Scotch foremen, and Indian laborers.

(3) The Buddhist religion, as practiced in Burma, is the stinkingest corruption of a spiritual faith to be found in the East.

(4) Drinking is absolutely the only relief and escape from the filth and discomforts of Burma open to white men.

(5) The "Road to Mandalay" is as devoid of romantic interest as it is of flying fish. And Mandalay itself is as hot and dusty as it is uninspiring.

* * *

Burmese People

In appearance the Burmese I saw reminded me of the Javanese, except for their features and coloring, which were Mongoloid. The men are short and squarish; the fat ones are chubby, not paunchy; and the lean ones do not get skeletal, as do the Indians.

The women are well-formed, too; although none I saw could lay the least claim to the beauty which so many travelers have been wont to attribute to them. Their dress is something akin to that of the picturesque Javanese women, with a long skirt wrapped around and folded in at the side, and form-fitting silk or muslin jackets.

Skirts ("longyis," they call them) are also worn by the men. These wrap-arounds are of ankle length, tucked in at the waist in front, rather than at the side.

A silk kerchief is tied on his head, and a rather flappy shirt, or jacket, hangs on the shoulders of the Burmese man.

Good fighters, these Burmese men, and many of them become soldiers of the King. But working is against their religion. Work is for women, whom they regard as little more than cattle.

This generalization has its exceptions, of course, like all generalizations. I met, for instance, a very bright native Burman who runs a printing establishment in Rangoon.

Indians, more than a million of them, have been brought in to do the labor on various foreign-directed projects. Jews, Dutchmen, and Scotchmen seem to direct these enterprises. Europeans go to Burma only to make money; not because they like it there.

The ever-present Chinese merchants are present, a hundred thousand strong, and all prospering, thank you. Educated Indians have gained riches in Burma, too.

* * *

Random Notes

Burmese are fancy dressers. They love to "put on the dog." The men dress in brocaded silks if they have to steal for them; while the highest ambition of a Burmese girl is to become the concubine of a European who can buy her golden bracelets and trinkets. She will actually starve before parting with this finery.

Rice growing is the chief occupation, together with festival-celebrating. After planting, a long series of festivals overlap one another right up to harvest time.

Hunting is good in Burma. Ducks, geese, and pigeons are to be had, also tigers and leopards. When going for the latter, hunters take along native beaters to scare up the big cats, and arm themselves with double-barrelled rifles of large bore. The jungle is so thick that one can see only a few yards ahead. Hence the big rifles, which are fired broadside into the target when it appears. Pity the huntsman with slow reaction time.

April, May, and June comprise summer; and boy, is it hot! I'll testify to that. During this time it seldom rains, and even tiny wisps of clouds are scarce. Moonlight is almost daylight, it is so extraordinarily brilliant.

Mosquitoes are fierce. Incense is burned in great quantities to fend them off, although Flit is making inroads into the ancient incense trade. (One thing I'd like to have is the Flit concession for the Far East).

Both the men and women smoke the native cheroots, which flare out at the ends. Almost the only sport for children is that of tying beetles to long pieces of twine, and flying them like kites.

The music, built on a six-note scale, and employing monotonously repetitive themes, sounds like caterwauling to foreign ears, although it's no worse than most Eastern music. Reed flutes, bamboo xylophones, and tuned drums (beaten with the heel of the hand) are the orchestral instruments.

Native dancing is done by the girls, and is, to put it blandly, suggestive. Sinuous arm movements, pirouettes, fanny wiggling, and a species of the shimmy are among the accomplishments of the dancers.

Troups of native actors tour the land during festival time. Some of the men are said to be pretty good. Shows start around 9 o'clock in the evening, and last until daybreak. Members of the audience bring not only lunch baskets, but their bedding! If they tire of the show, they take a little snooze, wake up, watch it some more, then snooze again.

Burmese movies are now being made in Rangoon, employing some of this native talent. Unlike the "flesh" shows—which are an odd combination of historical drama, vaudeville, and a revue—the movies have deep laid plots.

Possibly because of their custom of carrying loads balanced on their heads, Burmese women have an admirably erect carriage. It is their beauty ideal to remain as nearly breastless as possible. In the "up country" are the Palaungs, who like their women long-necked. To obtain this condition, they fit brass rings around their neck, adding to the number periodically so that the chin is forced upward continually.

Both men and women chew betel nut leaves—a mild narcotic which stains mouth, tongue, and teeth a sickening red. Also they splash lime on their faces, as a protection against the sun.

* * *

Elementals

Burma is largely a British possession (there are a few quasi-independent states. Its 261,000 square miles are bordered by China, Siam, Assam, and the Bay of Bengal.

Water is plentiful, and the country consists of a series of river-fed fertile valleys between hill chains, plus an extensive delta. Climate and rainfall, influenced by the elevation, vary greatly in different parts of the country. Principal rivers are the Irrawaddy and Chindwin, which are water highways full of traffic at all times.

A large portion of Burma is forest land, from which the profitable trade in teakwood comes. Oil is found in large quantities, too. Output is controlled by Burma-Shell, a subsidiary of Royal Dutch Shell. Tin, wolfram, copper, molybdenum, silver-lead-zinc ore, and rubies are mined.

The cultivation of rice, however, is by far the leading industry, and the chief support of the populace. More than 16 million acres, largely owned by natives, are under intensive cultivation. Irrigation is employed in some sectors; and the crops ripen in less than a year. Manufacturing plants are chiefly devoted to the milling of rice, the sawing of wood, the ginning of cotton, and the refining of oil. Home artisans weave beautiful silks, fashion bronze figures, work intricate patterns in silver, carve wood, and do remarkable things with colored lacquer on bamboo.

An important local industry, which is said to center in and around Mandalay, is parasol making. Every native seems to carry one at all times.

* * *

Buddhism

About the best thing that can be said for Burmese Buddhism, overwhelmingly the national religion, is that it educates the boys. There is practically no male illiteracy as a result of this system, which causes every boy to enter a monastery, where he is taught to read and write, during formative years.

Aside from that, we can't give it much. Among the accusations which can be laid at the doorstep of this religion is that it keeps the people poor.

Reincarnation is a cardinal tenet. Highest hope of every pious Burman—and they are all pious—is to return to earth as a man. They can *purchase* such a reincarnation by building pagodas, or by contributing to the "upkeep" of those already in existence.

As a result, a large body of Buddist priests lives off the populace in idle greed. Every third man you see seems to be wearing the saffron yellow robe which, along with the shaved head, is the distinguishing mark of the priest.

The Burmese variety of Buddhism is mixed with liberal doses of animism, which is the worship of spirits in nature.

Buddha himself, the Siddartha Gautama who arrived at a profound philosophy whilst meditating under a Bo-tree at Gaya in India some five centuries before Christ, would not recognize the religion which bears his name now in Burma.

Buddha taught that there was no God. The Burmese worship dozens, including moon-faced idols of Buddha himself (under the chisel of their sculptors, Buddha appears to be Tibetan, rather than Indian).

Buddha promised only surcease from troubles in divine annihilation, attainable by purity of thought and conduct.

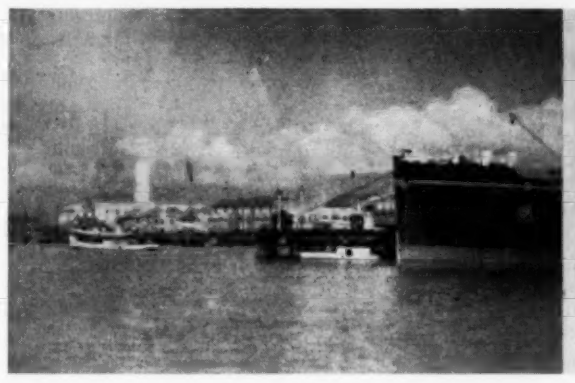
Burmese priests promise reincarnation in male human form in return for contributions (no matter if the contributions are the results of petty thievery). Breaches of the moral code are punishable by reincarnations as toads, mosquitoes (what a lot of sinners Burma must have had) or even, perish the thought, as a woman.

To the operations of this religion and the malpractices of its priests can be blamed most of the unlovely and odorous features of Burmese native life. Christian missionaries have been able to make headway only among the outcast races of Anglo-Burmans and Indo-Burmans.

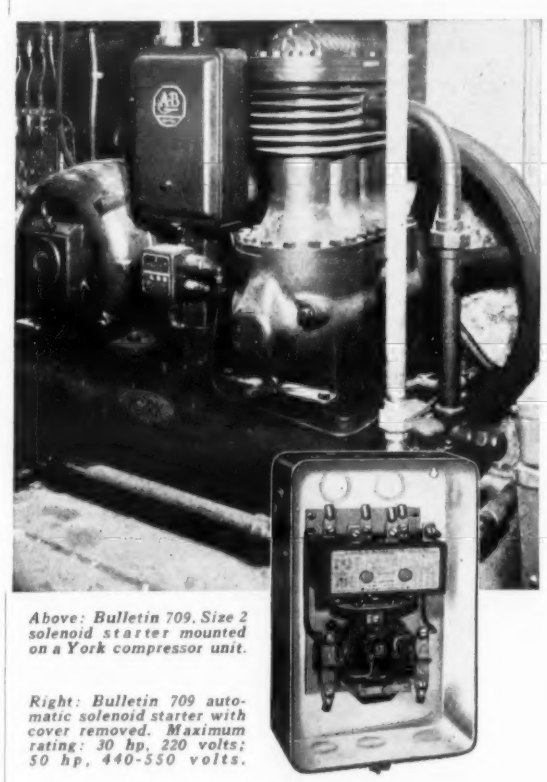
Religion is by far the most important factor in the life of the Burmese, and its hold is so strong and deep-seated that apparently nothing can be done about it.

As a result, the entire atmosphere of Burma—aside from a clean and highly modern business district in Rangoon—reeks foully.

Scenes in Penang—a Genuine Tropical Isle



Penang, says George Taubeneck, is a genuine tropical isle of rich beauty. Its principal city is known officially as George Town, to the natives as Tanjong, to the world as Penang. Shown here are a view of its harbor and another on one of its main streets.



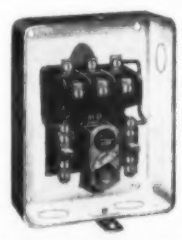
Above: Bulletin 709, Size 2 solenoid starter mounted on a York compressor unit.

Right: Bulletin 709 automatic solenoid starter with cover removed. Maximum rating: 30 hp, 220 volts; 50 hp, 440-550 volts.

BULLETIN 709

. . . a motor starter you can safely neglect

Bulletin 709SP across-the-line solenoid type starter for single phase motors.



Bulletin 609 manual motor starter. Overload protection.

The Bulletin 709 solenoid starter has been designed to eliminate all maintenance and attention. Its double break, silver alloy contacts never require filing or dressing. They will operate throughout their entire life without requiring any attention. As their contact life is not filed away, they will outlast several ordinary copper-to-copper contacts. Then too, contact rebound, the principal cause of contact burning and welding, has been virtually eliminated. The Bulletin 709 has no flexible jumpers to break and cause trouble and no pivots to stick. Nothing can interfere with the snappy action of its contact fingers.

Allen-Bradley offers a complete line of manual and automatic motor control equipment with special enclosures for every service. For complete details write, Allen-Bradley Co., 1313 S. First Street, Milwaukee, Wis.

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

SCURLOCK
KONTANERETTE KITS

For All Refrigerators

"A flip of the finger and the Kontaner is before you."

MEET COMPETITION . . . SELL YOUR PROSPECT A COMPLETELY EQUIPPED REFRIGERATOR

Kontanerette Kits fit all refrigerator shelves. Every prospect is thrilled with their convenience and economy. They will purchase it eventually . . . why not from you? Don't miss these extra profits. Sell a modern refrigerator.

Retails $2.75

Seven Kits—price range Retailing $2.00 to $4.95

Peak refrigerator sales—selling Kontanerette Kits

Saves 30% space over use of old-fashioned round jars.

SCURLOCK KONTANERETTE CORP.
1477 Mdse. Mart - Chicago

Buffalo Dealers Use Specialty Selling Methods to Fight Mail Order And Price Competition

By Eleanor Blum and Phil B. Redeker

Kronson Thinks Price Cutting Will Shorten Discounts

The cry of "price competition" which was heard all over Buffalo was echoed by Ernest Kronson, president of Ontario Electric Corp., Crosley distributor, who complained that department stores and Sears Roebuck, specializing on a small low-priced refrigerator, take a good share of the city's household refrigerator business.

His suggestion was that ELECTRIC REFRIGERATION NEWS open war on price cutting, which he condemns as "one of the most malicious practices in the industry."

Companies which cut prices excessively, he warned, would do well to bear in mind that their competitor can always go him one better; for there is nothing one dealer can do which can't be duplicated by another.

Would Profit with Shorter Discounts

"In the refrigeration business, dealers seem to get desperate for fear the season will pass and they will be left with old models. I believe, however," he avowed, "that eventually long discounts will be cut so that dealers will no longer be able to reduce prices—a system which would probably work out to their own profit in the long run."

J. L. Block, manager of the distributorship, joined him in his complaint and was particularly "het up" about the unit being sold by Sears for $97, which he said he had reason to believe was a two-year old model.

In spite of this competition, Mr. Block said that business was on about a par with last year's, with one or two dealers doing an exceptionally good sales job. He doesn't believe, however, that the 47% business increase reported for the United States is true of New York state. Neither does he share the opinion that the bonus money will have any material effect on business.

Need No Special Training

Five salesmen for the distributorship cover the 13 counties in which are situated their 350 active dealerships. Most of these men have been with the company so long, according to the manager, that they need no special training.

Lack of manpower, he said, is a serious handicap among dealers, but no problem at all for a distributorship. Two years ago the company hired a sales training concern to train the dealers' salesmen and the system was very effective. He laments the fact that there is no service similar to that available in Buffalo now.

Financing, about which the dealers worried for so long, is one of their least problems at present, Mr. Block stated. C.I.T. is being used for the most part, augmented by the Economy Purchase plan, which is on a recourse basis, and the Buffalo Industrial Bank, a non-recourse plan.

Dealers Who Are Doing Well

Among the dealers doing effective work, Mr. Block named Zolte Furniture Store, which does extensive advertising. On the wall of his office was a series of its bi-weekly cartoon advertisements which are being run on a seven week schedule in the daily papers. The first of these, which was typical, showed a girl in an old-fashioned bathing suit, with the words:

"You wouldn't buy a bathing suit like this—why be content with an old-fashioned refrigerator?"

Shaprow's, whose sales are 100% over last year's is the largest dealer working under this distributorship. Its three stores are employing 14 appliance salesmen, five of whom work on the floor all day while the rest are an outside crew.

Shaprow to Use Sales Coach

Mr. Shaprow dropped into the distributorship while we were there, and told us about the new display coach he is sending out starting July 1. Decorated in cream and red, the coach will carry the Shaprow sign and will display washers, ironers, refrigerators, and radios.

Going ahead of the coach on all its city trips will be a contact man who will act as a "door opener." He will ask prospects to visit the coach when it comes around and tell them about the small premium that will be given them when they do. The coach is large enough to accommodate two or three customers and the salesman.

65% of Sales from Canvassing

Shaprow depends on outside work for 65% of its sales, and walk-in traffic for the remaining 35%. To make the outside sale, this store does very little cold canvassing, depending on its previous customer-contacts. Through call-backs, direct mail, and small gifts and premiums, it "uses the user."

Most closing, Mr. Shaprow is convinced, must be done in the evening in the appliance business so that a salesman may contact the husband. Although he has both the Norge and Crosley franchise, he believes that a concentration on brand is a valuable sales aid.

Salesmen of this active store receive their training on the floor of one of the branches. With no routine sales course, they are taught the business through observation of other salesmen and actual sales experience in a place where an older man is ready to step in and save the sale if necessary.

Potter Dealer Claims Average Price Over $200

In its own home town, the Potter refrigerator is seeing increasingly greater public acceptance, claims E. L. Pettite, general manager of the A. R. Weber, Inc., Potter dealer-distributor. Figures which showed approximately a 300% increase in sales this year over last were presented by Mr. Pettite to back up his claim.

The Weber company uses the radio in a unique double function: promoting the product to the public, and attracting salesmen to the showroom.

Jist of Radio Program

In the "Opportunity Hour" as it is called, listeners tune in on two men sitting at a table chatting. During the course of the conversation, one mentions that he has recently joined a refrigeration company, the Potter, and explains why he has an enthusiastic outlook on his new job.

This plan, Mr. Pettite explained, serves to bring desirable men to him, and is equally effective in getting across the sales points of the refrigerators.

Advertising three times a week in two local newspapers augments this promotion. That it is effective, and that people are gradually accepting the product, says Mr. Pettite, is demonstrated by the fact that of the 20-25 refrigerators sold a week, one-third are sold to people who drop in and buy.

Refuse to Cut Prices

Mr. Pettite and his enthusiastic sales group "refuse to recognize price competition" and claim to be the only dealer which will not shade prices. This, we were told, is accomplished in the face of an average price per unit of more than $200.

His staff is made up of a "personality group" chosen for their ability and enthusiasm for the product, Mr. Pettite claims. For this reason, he said, most of the sales training is done individually.

The distributorship does its own servicing in surrounding territories, and requires that all service men in outlying districts be brought into its headquarters for training.

Service Arrangement

A typical arrangement, when the dealer has no service department of its own, has been put to work in Tonawanda, where the Potter dealer gives an independent service man $5 a unit; $2.50 at the time of the sale, and $2.50 at the end of the year guarantee period.

Manpower is a problem, Mr. Pettite finds, and must be worked up gradually. At present the number of retail salesmen averages between 20 and 25. They spend a lot of their time cold canvassing in the districts where the high price of the Potter is not a drawback. Paradoxically enough, the firm finds most of its sales made to purchasers in the $2,000-$3,500 income class.

Wagenschuetz Leads Dealers

The Wagenschuetz Hardware Co. in North Tonawanda to date is ahead of the seven other dealerships in northern New York in total retail business.

Weber's financing, Mr. Pettite stated, is handled by Metropolitan Commercial Corp., with terms extending up to 3 years. Only 15% of the business, he estimates, is on a cash basis.

Another policy which the company maintains is advertising that it will accept trade-ins for what it can sell them. The theory is that models of other makes on the floor are a good sales influence, because it shows the impartiality which the firm displays toward all competitive makes. The manager makes the boast that his salesmen never knock another make of refrigerator—"We don't have to," is his claim.

McCarthy's Method Is to Widen Dealer Coverage

More complete dealer coverage has helped raise this year's business average approximately 30% for McCarthy Bros. & Ford, Westinghouse distributor in Buffalo, Harris McCarthy, sales promotion manager, told us. Some reflection of the veterans' bonus is also seen in the dealers' records which show more than half of them in the district over their quotas for this period.

All Westinghouse installation and servicing in Buffalo is done by McCarthy Bros. who require that the dealers maintain only their own floor samples. Outside of the city the same rigid caution is exercised with the requirement that each dealership have its own service department.

"By exercising such care," Mr. McCarthy said, "we are sure that the job is done right."

Salesmen's Training

Five refrigeration wholesale salesmen visit 70 dealers, and on their regular visits often include a presentation of the Westinghouse sales course. Twelve records and 12 films, called the Westinghouse Quota Clincher Weekly Film Service, make a course that can be easily conducted by the salesmen in line with their regular duties, Mr. McCarthy stated.

Additional training is given to dealer's salesmen through the one-day sales schools held at the distributorship. The latest of these was given in March, the sales promotion manager said.

Their own salesmen, most of whom have been with the company a long time, are kept in active touch with the product they sell by staggered trips to the Westinghouse factory.

Active Buffalo Dealer

Outstanding among Buffalo dealers, Mr. McCarthy declared, is Scherer & Son, a furniture store handling Westinghouse, which does active newspaper and radio advertising, and is at present putting up one of the company's Neon signs. Schaeffer Bros. Co. at Lockport with 58% of its year's quota attained at the time of our visit, is one of the best out-of-town dealerships in point of sales.

Community papers are getting a lot of the dealership advertising which is sponsored by the distributorship on a 50-50 basis. Dealers seem to feel, Mr. McCarthy has found, that they would rather have a smaller coverage in their own districts even in free-distribution papers, than a larger, less effective coverage in the city papers.

McCarthy & Ford advertisements, inserted at regular intervals, promote Westinghouse and list in small blocks of copy the names of the 30 dealers in Buffalo.

Frigidaire and Kelvinator Lead

Frigidaire and Kelvinator probably are leading in Buffalo refrigerator sales, according to Mr. McCarthy. He was emphatic in his agreement with other Buffalo distributors, however, that hardest to meet was the competition from mail order houses and department stores.

Although he expressed himself as being resigned to it, Mr. McCarthy said that Sears was not only selling its old customers, but was selling people who could afford to pay more than in the $90-$100 class, and could afford to shop elsewhere than at Sears for everything else.

Department stores, also selling low-priced refrigerators, are doing a "good job," Mr. McCarthy said. Edwards, with the Excello brand and J. H. Adams Department Store with Universal Cooler interfere with the higher priced machines, he has found. Adams, for example, with its 4-cu. ft. model advertised at $96 cuts a serious inroad into the Buffalo business.

Direct Factory Setups Hurt Old Dealers, Pagel Says

"Greatest chiseling town in the world," Clarence J. Pagel, manager of the Grunow distributorship, called Buffalo. "Why one dealer here will give you your choice of a range, radio, auto radio, suit of clothes, bicycle—just about anything you name, with a purchase of a single refrigerator."

Mr. Pagel says he was present one time when a little girl came in and picked out the bicycle she wanted, and then the family bought the refrigerator necessary to get the bicycle. This dealer, of whom the Norge distributor also spoke, gives away so many suits that he maintains a regular clothing store stock, Mr. Pagel said.

Radio Used to Make Free Offers

Extensive radio advertising tells the town of this give-away proposition, and also spreads the word: "that isn't all—we have something more for you," for at regular intervals the store has a drawing, and the customer whose number is drawn gets back the entire purchase price of his refrigerator.

"Our business," Mr. Pagel stated, "is only about two-thirds of what it was last year. But you can't expect anything else in competition with off-brand refrigerators, and refrigerators not sold through regular channels.

"And what's more," Mr. Pagel said, "you can see how people will buy at the mail order houses. They give a guarantee with a strong company in back of it, they'll install a refrigerator on trial and there's no cost if the customer doesn't like it. The store has a good merchandising reputation so that even persons who can afford to pay more than $97 buy there."

Situation in Rochester

In Rochester, where refrigeration saturation is very low, Mr. Pagel said, Sears has approximately 50% of the business. Buffalo has approximately 25 to 30% saturation, he estimated.

That there are no profits in Buffalo, Mr. Pagel maintained, is shown by the fact that there are so few distributors there. The factories have to establish branches instead.

Buffalo is a specialty appliance town where the department store doesn't do much appliance business, according to Mr. Pagel. At first, he said, there were large, active appliance dealerships so that the department stores couldn't get in. Now it's the large dealer that is losing, and the little dealer, with a small overhead, who can afford to be content with $5, $10, $15 profit on a sale, who is getting the business.

"The problem," Mr. Pagel believes, "will boil down to whether or not there is a change in the method and manner of distribution. The present set-up of manufacturer-distributor-dealer allows for two extra profits. Will the manufacturers of standard makes start to retail directly from the factory, or from factory to dealer so that they can meet the smaller concerns who are doing that now?"

Buffalo Sales Picked Up in May After Lagging, Schwegler Says

According to reliable authority, household electric refrigerator sales in Buffalo up to May 1 were 24% behind sales for the same period in 1935, declared Albert Schwegler, of Schwegler Bros., veteran Kelvinator dealership.

"Our own sales were up 80% in May, though, and our Niagara Falls branch reported a 30% increase in business for the same month, so maybe we've almost pulled up even again," said Mr. Schwegler.

One reason why Buffalo may not be showing the sales increase found in other parts of the country is that the city was not hit so hard in the depression, according to Mr. Schwegler, so consequently it has no great "depths" to climb out of.

Another reason for the poor showing this year, believes the dealer, has been the prolonged siege of cool—no, *cold*—weather in Buffalo.

Effect Is Spotty

Mail order competition has hurt this year, admits Mr. Schwegler, but thinks the effect has been more or less spotty.

"Today, for example, with Sears offering a special 6-cu. ft. model at $97, the store traffic has been very, very slow, but the effect is only temporary."

Schwegler's salesmen work on a rotation plan which gives them a maximum of two days a week on the floor. The rest of the time they must put in doing outside sales work. The dealer is also trying out a plan of putting "junior salesmen" to work digging up prospects.

"It's difficult to get the right kind of manpower," complained Mr. Schwegler. "Too many men prefer to stay on relief at $15 a week rather than take a chance on a commission job."

Replacement Sales

Low-priced equipment designed to meet mail-order competition has made the public conscious of electric refrigerators, says Mr. Schwegler, with the result that he hasn't sold as many of the deluxe Kelvinator models, with the two-compartment design, as he had hoped.

He is very enthusiastic about these models, however, and is gratified that some of the sales on these new Kelvinators have been for replacement purposes.

On the whole Mr. Schwegler believes things are much better now, because fear has been banished. Where two or three years ago a man was worried about whether he would live the next week out, he now goes ahead to make major purchases with little or no fear of the future.

Bergman Does Delivering to Assure Customer Satisfaction

Bang-up promotional efforts and a widening customer range is the thing that is making Sears Roebuck such a threat in Buffalo this year, in the opinion of C. Curtis, sales manager of the Norge division, W. Bergman Co., Inc., Norge distributor.

Price cutting is a universal thing but when a store with the facilities of Sears starts to go outside its regular sphere of customers, there is bound to be a reaction on the sales of competing firms. Handbills, postcards, and newspapers are a few of the means by which the mail order house has shown itself a most active factor in the Buffalo refrigeration field, Mr. Curtis declared.

Although the sales manager said that his own firm had not done much promotion this year, sales by Buffalo dealers are approximately 33% ahead of last year's, and in the outlying territories, reach as high as 50%, he estimated. Of the 125 dealers in the city, several have already reached their year's quota.

Another type of tough competition in Buffalo, according to Mr. Curtis, is the store in town that gives a radio,

(Concluded on Page 9, Column 1)

Only as Efficient as

THE GASKET THAT SEALS IT

Miller has developed 20 door gaskets which fit practically all cabinets built in the last five years. Write for illustrated price list.

You can make money with Miller Refrigerator Gaskets. *If your local jobber cannot supply you, write direct.* Miller Rubber Company, Inc., Akron, Ohio, U. S. A.

"Engineers in Rubber"

Price Cutting and 'Give Aways' Assailed By Buffalo Refrigeration Dealers

(*Concluded from Page 8, Column 5*)

washer, or any of several other articles with the purchase of a refrigerator. Asked how they could do that, he explained that they advertise a well known product and then do a nice job of customer switching, or else they buy direct from the factory and save the distributor's profit.

To keep their own dealers in line, Bergman's allows them to buy only floor samples. Delivery, installations, and servicing is done from the distributorship so that if another dealer has a complaint the shipment is held up until the complaint is investigated. "Of course," he explained, "this isn't always effective because we often don't get the complaint until after delivery is made."

Service in Smaller Towns

In the small towns surrounding the city, the dealer hires his own serviceman who is then trained by the distributorship.

Mr. Curtis also blames price cutting for the lack of manpower in the industry. It is actually difficult for a salesman to make a living under present circumstances, he said.

Bergman's has five salesmen working on commission, and hasn't had much difficulty with turn-over. With Norge widening its activities, Mr. Curtis expects that it will be increasingly easy for the men to make a year-'round living. Even in the refrigeration industry, the curve is leveling off, he said, so that it is more of an all year business.

Guarantee and Rollator Chief Points

Norge's guarantee and the rollator feature this year have been the biggest selling points, Mr. Curtis said. Effective enough, he believes, to make Norge about the second biggest seller in that territory. He placed Frigidaire as first. Department stores are not serious competition in Buffalo, according to Mr. Curtis.

Saturday morning or Friday night is the meeting time for Bergman's salesmen. The entire forces of the dealerships are instructed at periodical meetings two or three times a year at central locations.

More active dealer promotion would help sales, Mr. Curtis declared, although the electric league is active and the power company has a cooperative plan on advertising by newspaper or radio.

Unlike several of the distributorships, Bergman's does no retailing in the household line; it does, however, retail commercial refrigeration. The company hasn't gone into air conditioning, Mr. Curtis said, because Buffalo weather is not favorable for domestic cooling. Summers there are never uncomfortably warm, it is claimed.

Jamestown Dealer Leads In Increase in G-E Sales

Frank W. Wolf, Inc., G-E distributor and dealer, reports a 5% increase in refrigerator sales this year over last, and a higher percentage gain in range sales, which have risen as much as 600% in a month in a few districts, according to John G. Sorg, retail sales manager.

Highest among the dealer averages is the Turner Radio Shop at Jamestown which has had a 300% increase in general business, and approximately 250% in refrigeration business this year. Jamestown, Mr. Sorg said, a Swedish town of approximately 46,000 population, reflects the upturn in business for its furniture industry. Warren and Bradford branches of the same company are also doing a nice business.

Know Everyone in Town

Although technically Turner Radio Shop uses the cold canvassing method in Jamestown, its six men know everyone in town and enter the house as acquaintances as well as salesmen. Original call, call-backs, and night calls, constitute the formula by which they work, Mr. Sorg declared.

"Up until a year ago," he stated, "95% of the sales were made in the home. Now with such a diversified line only 45% are made in the home completely, and 55% are closed either on the floor or after the customer has returned from a store demonstration."

For the distributorship, two wholesale salesmen take care of the 17 counties, and 21 retail salesmen handle the city sales.

To promote retail sales, the distributor uses practically all forms of advertising media, including spot radio announcements and an extensive newspaper schedule. That the firm also makes use of the G-E user's compensation plan which offers $5 for every $200 sale, is shown by the fact that 5,000 such books have passed through Mr. Sorg's hands since last August.

Although an attractive all-electric kitchen occupies one corner of the salesroom, Mr. Sorg said that it has been only a minor help in selling. Progressive, or "ensemble" selling, however, he believes, has a very promising future as one of the best media by which salesmen may make a decent living during the next six months.

Four days of rigid training in a sequence of "films, facts, figures, and then product," is this firm's method of training salesmen.

Utility Man Has Idea Why Sears Roebuck Is Active

One reason why Sears Roebuck may be such a factor in the Buffalo household refrigeration business is that it does an outside selling job—with part of its personnel comprised of former salesmen for the Buffalo General Electric Co., local utility which is part of the Niagara Hudson Power Corp. system.

At least that was one of the points that came out in our talk with William Hensel, manager of appliance sales for the utility.

A few years ago, the utility employed a staff of *salaried* salesmen who went around canvassing prospects, not for the power company, which did no merchandising of refrigerators, but as a means of boosting dealer sales.

Dealers Started Quibbling

But the dealers, so the story goes, got to quibbling over certain phases of this plan—the distribution of leads, etc., and the utility at the same time began to find out that many of the leads it uncovered were not being followed, to the disappointment of the prospective customer.

So the utility abandoned the idea of employing outside "sales scouts," and released its staff. A number of these very able, very active men are now employed by Sears Roebuck, we heard.

Central Showroom Provided

While the utility no longer hunts down prospects, it assists the dealers in other ways. In its beautiful, modernistic showrooms in the Electric Building, which are now being air conditioned, the dealers can display their refrigerators, and make their name known. Attractive young women act as hostesses in these showrooms and show the merchandise to any interested prospects.

Since thousands of people pass through this showroom daily, either to see the merchandise or to transact some business with the utility, the showroom of course has great advertising value.

The utility also provides a place for the dealers to hold cooking schools, cooperates in refrigeration shows, and includes refrigeration in its advertising.

Finance Retail Sales

Another function which is provided by the parent company, Niagara Hudson Power, is the financing of retail sales through what is known as the "Economy Purchase Plan."

Described in detail in ELECTRIC REFRIGERATION NEWS when first introduced a couple of years ago, the Economy Purchase Plan provides for the discounting of paper by the utility. Interest rates are low, and liberal time-payment arrangements are available.

Officials in charge of the plan declare that they did their greatest volume of business for any month in their history in the month of May, which indicates that the plan has received increased acceptance, and that May must have been a pretty good month for refrigeration dealers in Buffalo.

Stewart-Warner Doubles Radio Production Plans

CHICAGO — Stewart-Warner Corp. radio production schedules for the 1936 season call for at least a 100% increase over 1935, officials of the company stated today.

Schedules for radio production have been revised upwards as the result of heavy orders placed by distributors attending the radio convention which the company held in Chicago on Monday and Tuesday of this week.

Orders placed by Stewart-Warner distributors for summer and fall delivery of radios were more than twice as large as those placed at the convention last year. The company has already started active production on its 1936 radio line and expects to reach peak in about three weeks.

Feature of the 1936 Stewart-Warner radio attracting most attention at the convention, factory officials say, was the new Photo-Tone speaker. This is a one-piece welded speaker having all parts enclosed, especially designed for each size tone chamber, and by laboratory test has been shown highly efficient in the elimination of vibration and tone distortion.

Schedule of Delivery & Installation Charges Adopted by Rackliffe

NEW BRITAIN, Conn. — Rackliffe Bros. Co., Inc., Kelvinator Connecticut distributor, has inaugurated this year a delivery service on household electric refrigerators for distances up to 50 miles from New Britain.

The territory in which deliveries are made has been divided into two zones the first up to 15 miles from New Britain, the second from 15 to 50 miles from the distributor's headquarters. Installation on all deliveries is made by independent service men, appointed to act for the company in the territory in which the installation is made.

Delivery charges in the first zone range from $2.50, for the Kelvinator model K3-36, to $10, for the SD17-36; and in the second zone from $3.50, for the K3-36, to $10 for the SD17-36.

Installation and service charges, which are extra, range from $4 to $6 for most models, with the exception of Models SD13 and SD17, on which an additional charge of $20 is made for remote installations. The charges cover service for one year plus the four-year protection plan.

Each refrigerator is tagged with Rackliffe's telephone number, for owner to call in case of service.

Complete schedule of delivery and installation charges is:

	Delivery Charges Up to 15 Miles From New Britain	Delivery Charges Over 15 Miles	Installation & Service For 1 Yr. Plus 4 Yr. Protection
SD7-36	$4.00	$5.00	$6.00
SD9-36	4.00	5.00	6.00
SD13-36	8.00	8.00	*6.00
SD17-36	10.00	10.00	*6.00
PK5-36	3.00	4.00	6.00
PK6-36	3.50	4.00	6.00
PK7-36	4.00	5.00	6.00
K3-36	2.50	3.50	4.00
K4-36	2.50	3.50	4.00
K5-36	3.00	4.00	6.00
K6-36	3.00	4.00	6.00
K7-36	3.00	4.00	6.00
KS5-36	3.00	4.00	6.00
KS6-36	3.00	4.00	6.00

*$20 additional for remote installation. Remote installations on other models through special price from service department.

Sharp Upturn Reported In Building Industry

WASHINGTON, D. C.—Current figures released by the Bureau of Labor Statistics for new residential building permits indicate a sharp uprise in building during 1936 over either of the two preceding years, 1934 and 1935.

Permits in cities of 10,000 and over during May of this year amounted to $45,720,000 worth of residential building, as compared with $25,573,000 in the same month of 1935, and $11,958,000 in 1934.

Other months in 1936 showed similar figures. In January the total was $30,434,000; in February, $29,368,000; March, $37,916,000; and April, $45,523,000.

Paralleling these figures, the insured mortgage business of the Federal Housing Administration increased 237% during May, 1936, over May, 1935, reports Stewart McDonald, administrator.

Fedders Field Men Get Together

Branch managers of Fedders Mfg. Co. at their annual mid-year conference in Buffalo. Upper left: Al Criqui shows Frank Slagel (Los Angeles) and Charlie Rittling (Buffalo) how to assemble one of the new Fed-R-Vex drain baffles. Right: W. D. Keefe, sales manager, Constance Philps, and Mr. Slagel. Below: Norman Honecker (Boston), Mr. Slagel, Henry Sherman (Cincinnati), H. E. Riecklеman, Robert Chambers (Denver), Carlton Ohlheiser (Atlanta), Mr. Keefe, Herbert Hoover (Philadelphia), Frank Haag (New York City), Mr. Rittling, Ben Rhodes, Ed Riklin, and Oliver Gregg.

Sales Quota Bettered in Associated System's 1936 Refrigeration Jubilee

NEW YORK CITY—Bagpipers of the Associated Gas & Electric System had something to blow about June 30, at the completion of its 1936 Refrigeration Jubilee, for, up to June 20, the sale of 46,938 refrigerators (electric & gas) brought the combined company and dealer sales 104.5% above the contest quota.

With company and dealer sales totaling 42,819 units on June 13, the total was increased to 46,938 in the week following. Of this figure, 44,681 were electric unit sales, and 2,036 gas refrigerator sales.

The Florida Public Service Co. with 166% of quota, led the 15 properties whose sales of electric units had surpassed the 100% quota mark by June 20, while K-T-I skyrocketed its gas refrigerator turnover so that 280% of its unit quota was sold by this date.

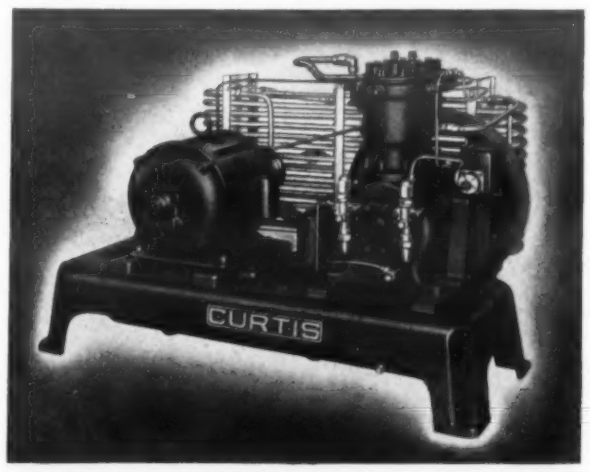
During the week of June 13-20, the following properties joined the number of 100% quota breakers on electric sales: Empire, Northwestern Pennsylvania, Southwest U. S., and Virginia Public Service, and, for the gas division, Central U. S. Utilities.

Characterized by a keen spirit of rivalry in which the individual divisions of the Gas & Electric System's selling organization vied with one another in utilizing suggested promotional methods to outmatch competitive clans, the contest, which started May 11, has brought the System's sales approximately 50% above those made during the corresponding period of 1935.

A typical promotion was that used by the A. G. E. operating companies' dealers in Johnstown, Pa., where a distinguished imitation of "Sandy McSavor," patron-scot of this load building contest, bag-piped his way through the city streets, attracting the attention of a parade-loving populace to the local refrigeration dealers' Jubilee sales drive.

CURTIS REFRIGERATION
Units to fit every need

Curtis, one of the oldest compressor manufacturers, offers an unusually complete line of refrigerating units—1/6 to 2 H.P. air cooled; 1/3 to 30 tons water cooled—reflecting 82 years of successful engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors.



ESTABLISHED 1854

Write for details.

CURTIS

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Company
1912 Kienlen Avenue, Saint Louis, U. S. A.
In Canada
CANADIAN CURTIS REFRIGERATION CO., LTD.
20 George Street, Hamilton, Ontario, Canada

ELECTRIC
REFRIGERATION NEWS

Registered U. S. Patent Office
Copyright, 1936, Business News Pub. Co.
Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell—Detroit

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00. All other Countries: $5.00 per year.
Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
PHIL B. REDEKER, *Managing Editor*
THEODORE T. QUINN, *Assistant Editor*
WINIFRED HUGHES, *Assistant Editor*
ELEANOR BLUM, *Assistant Editor*
K. M. NEWCUM, S. L. POTTS, and J. J. MURRAY, *Contributing Editors*

GEORGE N. CONGDON, *Business Manager*
ROBERT P. NIXON, *Asst. Business Mgr.*
HELEN K. GILMORE, *Asst. Business Mgr.*
R. T. CARRITHERS, *Spec. Representative*

JOHN R. ADAMS, *Production Manager*
JEAN H. ADAMS, *Subscription Manager*
LOLA E. DEW, *Circulation Manager*
WINIFRED MERSON, *Spec. Representative*

Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOL. 18, NO. 10, SERIAL NO. 381
JULY 8, 1936

Dramatic Appeal Needed to Sell Air Conditioning

OUR impressions from interviews with air-conditioning dealers, and information obtained from various sources, has led us to wonder how much real *selling* of air conditioning is being done this summer. We are beginning to believe that most of the installations are being *bought* (rather than *sold*).

If there are air-conditioning contractors who are doing an outstanding sales job and who are developing the pattern for successful local promotion of air-conditioning business, we have not heard much about them.

The argument has been advanced by some dealers and manufacturing executives that there is no great need for active sales work since more inquiries are coming in, particularly from commercial establishments, than can be handled conveniently.

However, looking at the records of the actual installations being made in the leading cities (as reported by the public utility companies which are keeping a close check on the business), it does not appear that any one dealer should be burdened with orders, much less the two or three dozen concerns which are presumed to be ready to meet the demand in each city.

The idea is growing on us that the industry is putting too much reliance upon the so-called "public acceptance" of air conditioning. We can remember when the same condition prevailed with reference to other engineering products.

Any old-time vacuum cleaner salesman can tell you about the days when the public took enormous pride in the invention of the vacuum cleaner and when every housewife admitted its great advantages—but *nobody bought it.*

For a long time there was a similar attitude toward the washing machine. The public talked much about this great boon to the tired housewife, but the woman who needed one did not think she could afford to buy it, and it never occurred to the folks who could afford a laundress that there was any reason why they should invest in the new contraption.

Many of our readers can probably remember when the public "accepted" the statement that the airplane had been *perfected*, but nobody (excepting a few daredevils) had the slightest intention of taking a ride in one.

Thus experience has shown that "public acceptance" should not be confused with *active desire* or *willingness to buy.* Certainly air conditioning has achieved great popularity as a topic of conversation among people in all walks of life, but turning this avid interest into a buying motive is apparently going to be a problem.

One element of sales resistance seems to be a general belief that air conditioning is still in the early stages of development and that prices will be much lower within a few years.

Even in the trade we hear the old argument: "Wait till they get an outfit to sell for one hundred dollars." That is the usual figure mentioned by everybody who is waiting to buy something which costs more. Also there seems to be a deep-rooted belief that *anything* can be sold to the American home if it just does not cost over one hundred dollars.

Regarding the actual probability that a drastic lowering of prices for air conditioners may be expected, L. C. Boulware, vice president of the Carrier Corp., gave some logical reasons for thinking otherwise at the Edison Electrical Institute Conference in March. Mr. Boulware said:

(1) "Volume does not hold out the promise for reduced prices in the air-conditioning field that it has in others because of the ratio between manufactured products to hand work on the job.

(2) "Selling margins are so low now that there is more probability that they will go *up*, instead of down.

(3) "Some sort of inflation seems almost surely ahead of us, with costs of labor and materials skyrocketing right now."

But if the salesman has convinced the prospect that air conditioning has passed the experimental stage and that a great price reduction cannot be expected, he still has the task of convincing the prospect that he should spend his money *now* to buy air-conditioning equipment *instead of something else.* In his address Mr. Boulware put that problem thus:

"Certainly no industry, save possibly the automobile, was ever so blessed as we are with a natural public interest in, and desire for, our product. But this does not necessarily mean sales, and we need to precipitate this interest into purchases, through having our advertising and salesmen interpret air conditioning to them in terms of *what it will do for them* in their particular shop or home—and then persuade them why they should have it *now.*"

From the foregoing it appears that what is needed to sell air conditioning now is a "dramatic appeal" that moves the people to action. An example of such dramatic appeal was recently related by a dealer. He said:

"I was trying to convince a prospect of the health aspects in improving the air conditions of his home, but the prospect replied that he couldn't find anything wrong with the atmospheric conditions in his home as they were, and that he was enjoying the best of health under existing conditions.

"So I changed my tactics and declared that while uncontrolled indoor atmospheric conditions might suit him all right, what was their effect on his small baby, who spent most of his waking hours on the floor? When he got down on the floor himself and felt the drafts he was unconvinced no longer, and I got an order."

Electric refrigeration salesmen have specialized in the type of selling in which dramatic appeals are used to best advantage. This situation presents another confirmation of our belief that air-conditioning sales will be accelerated when more electric refrigeration organizations are induced to enter the business.

Letters

Who Has a Kerosene Unit Under 175 Lbs.?

Clifton, Ariz.
Box 118
June 30, 1936.

ELECTRIC REFRIGERATION NEWS:

I am writing you about a kerosene or gas refrigerator.

This is why.

I live on a ranch and have to pack in on burros, five miles, and I would like to know how small a box one can get, for I can't pack one in over 175 lbs. so if you make them that small, or any that can be taken apart and then assembled after, we could get it to the ranch. Of all the companies we have been to, they are all too large and cannot be taken apart.

We have an all mountain trail and just so one burro can travel it, one ahead of the other, and so far haven't been able to get a refrigerator out to the ranch. So will you let me know if you have any small enough.

W. E. MCLAUGHLIN.

Specifications First, then the "Blue Book"

Retail Furniture Association of California, Inc.
Member: California Retail Council, Western Furniture Conference, National Retail Furniture Association.
180 New Montgomery St.
San Francisco
June 30, 1936.

Gentlemen:

Realizing that in the merchandising of electrical refrigerators the "trading-in" of used boxes is fast becoming a problem deserving the careful consideration of retailers, members of the Appliance Buyers Division of this association are endeavoring to solve this problem through the establishing of a schedule of trade-in allowances which might serve as a guide to retailers as well as distributors.

The replacement market possibilities for this product are readily recognized by manufacturers as well as ourselves and it is to be expected that forthcoming models possessed of new utility features will greatly stimulate consumer desire for modern equipment, which, in turn, will result in greater trade-in business.

The retailers represented through this association have, during the past three months, met with the distributors of the larger and better known refrigerator manufacturers located in this area in an effort to set up some form of "Blue Book" which would cover the situation.

One of the chief difficulties encountered is the fact that since the year 1930 there have been a great many models put out by the various manufacturers and we have found that to try and describe these many models by year and size is a difficult job and in all probability when the list is compiled few salesmen will know enough about these various models to be able to recognize them when appraising old boxes to be turned in for new ones.

At our last meeting, it was suggested that I communicate with you and inquire if you have set up or established any schedule covering the situation, in a simplified form. We have set up several plans all of which appear to be too long and complicated and if placed in the hands of a salesman we feel would be of little value to him.

I would greatly appreciate any information that you may have available, or any published schedules covering suggested appraisal values on used mechanical refrigerators manufactured prior to and since 1930.

GEORGE W. FITCH,
Managing Director.

Answer: We have given considerable thought to the matter of a "Blue Book" to meet the demand for such a service which has grown up during the past year or two.

As the first step in providing such service we announced the publication of a "Specifications book" as part of our 1936 program. This book was originally scheduled for publication in March but it is still in process and we are now making a great effort to get the job done during this month (July).

In planning this book, we started out with the idea that we could collect and correlate the specifications which have been published in the NEWS during past years. When we got into the job, however, we found that there was too much variation in the data and that certain important items of information were missing.

We realized that the immediate and most obvious market for the Specifications book consisted of service companies and that they need such items of information as compressor model number, belt size, refrigerant charge, oil charge, etc.

We now have nearly all of the data collected and set in type but we have had great difficulty in filling in the missing items during recent weeks because all of the manufacturing organizations have been in the midst of the busiest season in their history. Several of them have expressed their willingness to cooperate but have simply thrown up their hands because they had no one available who could be assigned to the job of looking up data from old records.

For example, we just obtained the Frigidaire household unit data last Saturday. You will understand why we felt that the book could not be closed up unless it contained that important material. We still lack the data for a few small companies and for some of the earlier years but we now have very comprehensive tabulations which we believe will satisfy most practical purposes. We will, of course, continue to work on revisions and additions for another edition of the book next year.

Obviously it was necessary to collect this data as a preliminary to the proposed "Blue Book." As soon as we get the Specifications book on sale and have an opportunity to secure the reaction of the trade, we will then be in shape to consider plans for the addition of trade-in values.

No doubt you realize that the publication of trade-in values will involve a number of good-will hazards since such a book can be used for competitive sales purposes both by electric refrigeration salesmen and by the ice industry. There are a number of problems to be considered.

Do You Want a Dealer In South Africa?

Detroit, Mich.
June 30, 1936.

The Editor:

It is a long trail from Johannesburg, South Africa, and though I have been in your wonderful city (nearly as wonderful as Johannesburg) I have been, through pressure of business, unable to make a call on you. Perhaps, however, before I return to South Africa I shall be in Detroit again when I shall give myself the pleasure of calling on you.

As a subscriber to your REFRIGERATION NEWS (Refrigerators, Ltd., Johannesburg) we are interested in new ideas regarding refrigeration, air cooling, and the like, and would welcome suggestions from some of your advertisers with a view to locating a market for them in South Africa to our mutual benefit.

I mention this to you in a personal way, as you may have knowledge of same article that would interest us. It is a tall order I will admit, but if you can assist us I shall be grateful.

W. DICKINSON.

Challenges Door Infiltration Data in ACMA Code

Van Kannel Revolving Door Co.
Architects Building, 101 Park Ave.
New York City

Editor:

I just noticed the information contained on page eighteen of your issue of June 17 concerning Door Infiltration in Summer Commercial Establishments. It seems that this information would be somewhat misleading to a casual observer or reader because of the fact that the data published in the table which you give is based on doors in entrances which have doors in one wall only, but this qualification is not brought out at all conspicuously and is only shown in a note at the bottom.

As a matter of fact, the least important problem of entrance infiltration comes under the condition where doors are in one wall only. The really serious problem of entrance infiltration occurs where doors are located in more than one exterior wall.

It would, therefore, seem logical, if you are to give information, that both conditions be given equal prominence and that the conditions prevailing where doors are located in more than one outside wall be brought prominently to attention since this is really the danger point.

For your information, we are enclosing a copy of our pamphlet which we have issued under the title "Data on Entrance Infiltration." This material was covered by papers in the June issue of *Heating, Piping, and Air Conditioning*, and also of *Refrigeration Engineering.*

We would be glad to cooperate with you in any way, and at any time, concerning the publication of accurate information on entrance infiltration.

ARTHUR M. SIMPSON,
General Sales Manager.

York Specifications

York Ice Machinery Corp.
42nd St. and Second Ave.
Brooklyn, N. Y.

Gentlemen:

Will you kindly send us the issue of REFRIGERATION NEWS which lists all makes of compressors, and also the issue listing York compressors.

A. H. ORROK.

Answer: The May 6 issue contains specifications of all leading makes of commercial refrigerating machines. The specifications of York machines in this issue are quite incomplete, but through no fault of ours. In fact, this is the first year that the York Co. has furnished data although we have been publishing such information for the past five years.

Frigidaire Parts for Independent Companies?

Frank R. Bader
Authorized Frigidaire Service
Electric Refrigeration & Oil Heating Eng.
Office—252 George St.
Stock Room & Shop—177 Lawrence St.
New Brunswick, N. J.

Dear Sirs:

The last time I renewed my subscription to the REFRIGERATION NEWS I ordered the Specifications book on a special offer. To date I have not received this. Will you please forward this as soon as it is conveniently possible.

In regard to the Frigidaire Corp. advertisement in your paper for the past two issues, I wish to inform you that they will not sell the independent service dealers parts as their ad specifies. I think this is unjust advertising as they do not live up to it. I have contacted the Distributing Department in Newark, N. J., and they inform me that New York and New Jersey are not going along with that advertisement. I wish you could find out for me what they intend to do about this in the future.

Will you please send me the name and address of the concern that manufactures frozen fresh fruit and vegetables and also who makes their equipment to store these articles. I have several inquiries on these products and any information that you can give me will be appreciated.

FRANK R. BADER.

Answer: Your letterhead says "Authorized Frigidaire Service" and therefore we do not understand whether (1) you are opposed to the newly announced policy of Frigidaire or (2) are having trouble in getting parts.

Considering the fact that Frigidaire's new plan is a radical departure from a long-established policy, no doubt it will take some time to perfect national distribution.

When Will the Next Edition Of Directory Appear?

E. I. du Pont de Nemours & Co., Inc.
Wilmington, Dela.

Gentlemen:

This refers to your letter of June 5 regarding our order M-455 for one copy of the 1936 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

We note you say no definite announcement regarding the date the 1936 DIRECTORY will be ready has been made. As we are ready to work on this DIRECTORY in connection with one of our mailing lists, we shall appreciate your letting us know, if you can, whether this new DIRECTORY will be published in a month or six months. With this information at hand, we will be better able to decide just what action to take in connection with our mailing list.

D. R. RUTTER.
Asst. Director of Advertising.

Answer: Because of delays in our schedule of books, it does not look like we can issue a new DIRECTORY this year. We may be able to turn out an *early* 1937 edition.

About Long Guarantees

Universal Cooler Corp.
Detroit, Mich.

Mr. Cockrell:

Anent your recent comprehensive presentation of the warranty situation in the electric refrigeration field, perhaps the enclosed quotation from *Saturday Evening Post* is helpful; or does it give the customers' attitude toward the guarantee?

GEORGE MOISTER,
Director of Advertising.

Editorial Note: Mr. Moister refers to the following lines from a story by T. S. Stribling:

"But how could you?" interrupted the lawyer. "There isn't anything here for you to do."

"Why, I know how to typewrite—and keep books. I took a six weeks' correspondence course with the Wildenborg Institute of Practical and Theoretical Business Management. I've got a diploma from 'em and a g'arantee that they will get me a job at a hunderd dollars a month."

"You didn't get the job, did you?"

"No, but I still got their g'arantee."

Wrong Letterhead

Ignition Service & Supply Co.
Grunow Refrigerators & Radios
16-17 Central Ave., Albany, N. Y.
July 6, 1936.

Publisher:

Please accept the writer's thanks for publishing my letter of the 23rd. I want to however correct a misprint. We are not distributors for Stewart-Warner refrigerators or radios.

On Jan. 1 of this year we became distributors for the Grunow refrigerator. It just so happened the stenographer wrote your letter on a Stewart-Warner letter head.

H. J. ZEHNER.

Air Conditioning

Peerless Conditioner Coils Featured by 'Equa-Lizer Feed'

(*Concluded from Page 1, Column 3*)

less exterior wedged fins, wide fin spacing permitting high efficiency, "rifled" tubing and interior finning, and Peerless "Heat-X-Changers," permitting the coils to be run wet their entire length, securing maximum efficiency with a suction line dry both inside and out.

The last two features, say Peerless engineers, are important, the first because it saves compressor wear by returning to it only undiluted oil, the second because it eliminates the use of suction line insulation.

Also furnished on the units is another new Peerless development, the "Equa-Lizer Feed," standard on all equipment above the 1-ton size.

This device dissipates the kinetic energy of the flowing liquid refrigerant by centrifugal action, then proportions the liquid fed to each circuit by balanced hydraulic pressures. All coils may therefore be built for counter-flow of refrigerant and air, and maximum capacity secured from every foot of coil surface, with return of any liquid refrigerant due to percolation or "geyser action" eliminated.

The coils are furnished for any refrigerant, and are suitably circuited and headered for each. They are complete, except for expansion valve.

The "Bandbox" ceiling suspension comfort cooler, decorative in appearance, also has a number of technical features, most interesting of which is its method of air distribution.

Air is drawn through the cooling coils by means of two attractive new masking fans, having axes set at angles of 45° to each other, and blown out at divergent angles to insure proper coverage and distribution of the air throughout the cooled space.

With the largest of these units, say Peerless engineers, it is possible to cool evenly a space 40 by 40 feet from a single installation, without objectionable drafts, even to desks directly under the cooler.

The coolers are equipped with dryer coils and are fully insulated. They are shipped complete with expansion valve, and are available in four sizes: ¾, 1, 1½, and 2 tons capacity.

Peerless also has a line of 27 standard air-conditioning coils in various sizes and shapes, ranging from ½ to 5 tons capacity. The company also manufactures air-conditioning coils for special requirements, from 1/10 to 35 tons capacity in single coils, and up to any size in multiple coils. Above 1 ton per valve, the coils are all "Equa-Lizer" equipped.

A bulletin just issued by the company describes the new equipment, and includes a single-page chart for use in measuring heat loads and determining the necessary low and high-side equipment for both simple and complex installations.

Corozone Plans Line That Can Be Sold All Year By Specialty Dealers

CLEVELAND—Equipment that the specialty selling, non-technical type of outlet can merchandise 12 months a year is what Corozone Air Conditioning Corp. has set out to produce, A. W. Conley, Corozone president, told distributors and dealers at a recent convention here. Portability, ease of installation, and engineering-at-factory are the features of Corozone equipment which will be stressed.

Most recent development at the Corozone factory is a portable, self-contained, room-cooling unit, priced at $249.50, which is adequate, it is claimed, for an ordinary sized room. A complete line of equipment for winter conditioning is in readiness, however, the president stated.

Norge Develops New Line Of Space Heaters

DETROIT—Norge Heating and Conditioning Division recently introduced on the market a new 1936 line of circulating space heaters which the company claims will meet the needs of practically every section of the country.

Three sizes, in both standard and deluxe models, make up the line. Standard models are finished in crackled enamel and the deluxe in green porcelain. In addition, a smaller radiant heater, in one size only, is being marketed in both iron and porcelain.

240 of Washington Hotel's Rooms Are Conditioned by G-E

WASHINGTON, D. C.—Two hundred and forty rooms, representing 80% of the total available space of the Harrington Hotel here have recently been air conditioned with a General Electric system, reports Augustus Gumpert, manager of the hotel.

The supply of conditioned air will be under direct control of the occupant in each room by the opening or closing of a small damper in the supply duct.

Installed by Mehring and Hanson Co. of Baltimore, the system is of the central type utilizing refrigeration machinery of 80 tons capacity, augmented by the use of well water, which gives the system greater capacity.

Two V-8 40-hp. condensing units, supplied by the Hudson Air Conditioning Corp., G-E distributor in Washington, will provide a cooling effect equivalent to the melting of 160,000 lbs. of ice every 24 hours, it is claimed. These units are located in the basement of the hotel and supply cold water to the air conditioners located on the roof of the fifth floor in a specially constructed penthouse.

Air which is forced through the coils of the air conditioners is lowered in temperature, dehumidified, and filtered before it passes to the floors below.

From the conditioners, the air passes down through the building in a giant vertical duct which was placed in a passage cut through a series of guest rooms on each floor. The duct was furred in and plastered where it was exposed in the rooms and occupies a relatively small quantity of space, engineers say.

At each floor a pair of branch ducts run down the halls close to the ceiling and distribute the air to each room. Holes were cut in the wall above each transom through which the short ducts were run with the damper control just inside the door.

The lever by which the damper is operated is similar to the handle to open and close a transom, and lock in a wide range of positions.

Five floors and the mezzanine of the old part of the building, and seven floors in the new ten story building of the hotel have been conditioned, which includes almost the entire building except for the main floors which already are partially cooled, according to the management.

M-H Advertising Will Employ 'See Your Dealer' Theme

MINNEAPOLIS—A continuation of its policy of advertising automatic heating and air conditioning with special emphasis on the "See Your Dealer" angle has been announced by Minneapolis-Honeywell Co., controls manufacturer, for its new advertising program.

Beginning in August, the company reports, the amount of national advertising will be materially increased. It will include a continuation of the series of advertisements started early this year in *Time, Nation's Business, Business Week, American Home,* and *Colliers* magazines. To that group will be added a schedule in the *Saturday Evening Post, House Beautiful,* and one or two other magazines.

One hundred thousand lines of newspaper advertising in more than 30 metropolitan newspapers will be included in the schedule, officials of the company declare. They estimate that this copy, emphasizing immediate installation of automatic heating and air conditioning, will reach 54,000,000 consumers. Stress will be put on the importance of seeing the dealer for information and installation.

At local meetings conducted by factory representatives of the company, window and counter displays, consumer folders, and printed matter will be explained to the dealers and salesmen as part of the dealer sales helps included in the Minneapolis-Honeywell publicity plans.

Standard Opens Branch Office in Chicago

CHICAGO—Standard Air Conditioning, Inc. division of American Radiator & Standard Sanitary Corp. has opened a branch office here at 822 South Michigan Ave. The company will utilize the entire two-story structure adjoining American Radiator's building for display and sales purposes. B. M. Meyer is manager.

Individual Control in Hotel Rooms

An unusual feature of the Airtemp air-conditioning system in Hotel Statler, St. Louis, is the Statler-Airtemp Regulator, with thermometers showing indoor and outdoor temperatures and controls permitting the guest to regulate the degree of cooling and dehumidification as well as the amount of fresh air coming into the room. Inset at upper right shows a close-up of the Regulator.

* * *

Airtemp Installs System in St. Louis Statler Hotel

(*Concluded from Page 1, Column 4*)

conditioning is becoming increasingly popular in public places, as well as in private homes, Mr. McKowne, who officiated at the opening ceremony, declared it to be his opinion that air conditioning will soon cease to be looked on as a luxury, and will become a necessity.

"In pioneering the installation of air-conditioning equipment in Hotel Statler," said Mr. McKowne, "we do so because we expect and want to be prepared to meet a widespread demand on the part of hotel patrons for a new standard of comfort, which can be established only through the modification of extreme climatic conditions."

Other speakers at the luncheon ceremony included Mayor Dickmann, Mr. Dysart, Mr. Nunn, B. T. Moyer, president of Airtemp, Inc.; C. S. Abell, manager of St. Louis' Hotel Statler.

Chief feature is the Statler-Airtemp Regulator, by means of which guests may control the extent of cooling and circulation of air within their rooms, according to their personal desires. The new instrument contains, in addition to themometers which register both inside and outside temperatures, a control mechanism which permits the guest to regulate the degree of cooling and dehumidification, as well as the amount of fresh air coming into the room.

Rooms in the hotel are air conditioned by individual units, which operate independently so that any adjustment on the conditioning equipment made by one guest in his room in no way affects the operation of units in other rooms.

Each room unit, of compact and attractive design, contains a coil through which cold water flows, and a fan for circulating the air over the coils and around the room. The units are set into cabinets below the windows in an inconspicuous manner, leaving an aperture through which air can be brought in from the outside and circulated with the air already in the room.

Air brought in from the outside, as well as that already in the room, is cooled, cleaned, and dehumidified in passing through the unit, with a resultant lowering of temperature and relative humidity, offering comfort through the warmest weather.

The fan in each of the room units has three speeds, to regulate the rapidity of air circulation. The conditioner may be used to circulate the air without cooling or dehumidifying, if desired.

Water, cooled by a central compressor located in the basement of the building, is pumped by means of an electrically driven centrifugal pipe through a central feeder system, which has branches leading to the coils of the individual room units. After passing through the coils of the room unit, the water flows into a central return which brings it back to the basement, where it is recooled and recirculated.

The water flows through a closed circulatory system which eliminates all possibility of contamination. Dirt and dust which the conditioning system removes from the air are carried away through a central water drain.

U. S. Gypsum to Sell Glass Insulation of Two Companies

TOLEDO—The United States Gypsum Co., with exclusive selling rights on "Red Top" insulation, an Owens-Illinois Glass Co. fibrous glass product, recently announced a similar sales agreement with Corning Glass Works, the only other manufacturer of that product.

Engineers of Corning Glass and Owens-Illinois have been conducting cooperative laboratory experiments on this type of insulation and have now combined research forces for the development of the product in other fields than building. Immediate applications include thermal insulation for industrial and domestic equipment, pipe insulation, and electrical insulation.

Although fibrous glass was first produced in Europe, it is now being manufactured there through license of patents and equipment developed in this country. A few months ago, Owens-Illinois shipped two machines to make fibrous glass, one for insulation purposes and the other for glass thread and yarn for development in textile applications to a glass manufacturer in Dusseldorf, Germany, company heads report.

The insulation product is being promoted by the United States Gypsum Co. for use in domestic insulation in both old and new buildings and is claimed by that company to be vermin and moisture proof, acid resistant, and able to withstand temperatures approaching 1,000° F.

57 Engineers Graduated By Carrier School of Air Conditioning

NEWARK — Fifty-seven men, all graduates of accredited engineering schools, were graduated from the Air Conditioning School of Carrier Engineering Corp. in June with a closing program in commemoration of the twenty-fifth anniversary of Willis H. Carrier's disclosure of the Rational Psychrometric Formulae.

Air conditioning engineering, application, and installation were covered by Carrier's staff engineers in the lecture series.

At the completion of the examinations, the graduates were added to the headquarter departments and to district offices and local installation organizations of Carrier throughout the country.

LINE YOU UP FOR A
BIG SHARE OF REPLACEMENT BUSINESS

Cutler-Hammer Control, time-tested and proven on hundreds of thousands of popular refrigerators, is now available as a replacement unit. With only 4 models you are ready for 99% of the business in your community (one for sulphur dioxide systems, one for methyl chloride, two for temperature in 24" and 48" tube lengths). Small stock means small capital outlay, fast turnover, no shelf-losses.

Each control provides wide-range cold control, the famous C-H overload, protection to motor under all circumstances, simple and rugged design, modern and attractive appearance.

This control installs easily behind the evaporator shield . . . either horizontally or vertically. A screw in the knob adjusts cold control. A screw in the rear lengthens differential. One screw removes cover for inspection.

Replacement Control for Beverage Coolers and Ice Cream Cabinets rounds out this line. The market is waiting; this concentrated line should bring big returns. Send NOW for descriptive literature; see your jobber for supplies. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus,* 1362 St. Paul Avenue, Milwaukee, Wis.

CUTLER-HAMMER
REFRIGERATION CONTROL FOR REPLACEMENT SERVICE

Report of Boston Air-Conditioning Bureau Shows Where Air-Conditioning Systems Have Been Installed in Boston Area & Who Made Equipment

Theaters (15)

Name and Address	Installation	Horsepower	Date Installed
Capitol, Allston	Carrier	160	Before 1932
Coolidge Corner, Brookline	York	75	1935
Inman, Somerville	Boston Ice Co.	5	1935
Keith Memorial, 539 Washington St.		430	Before 1932
Keith Boston, 614 Washington St.	Carrier	300	Before 1932
Metropolitan, 268 Tremont St.	Whittenmier	353	Before 1932
Oriental, Mattapan	Carrier	190	Before 1932
Orpheum (Loews), 413 Washington St.		452½	Before 1932
Paramount, 549 Washington St.	Carrier	235	Before 1932
Scollay Square Olympia, 56 Scollay Square	B. F. Sturtevant	433	1926
South Station Theater, South Station	Boston Ice	7 tons ice daily	1935
State (Loews), 205 Massachusetts Ave.		440	Before 1932
Strand, Dorchester	Carrier	205	Before 1932
Uptown Theatre, 239 Huntington Ave.	Carrier	160	Before 1932
Washington Street Olympia, 658 Washington St.	Carrier	185	Before 1935

Restaurants, Bars and Night Clubs (55)

Ambassador Restaurant, 41 Winter St.	Frick	30	1935
Bradford Hotel Grill Room, Tremont St.	Carrier	18½	1934
Blue Hill Cafe, Mattapan	York	18	1936
Chamber of Commerce, 80 Federal St.	Buerkel & Co., Inc.	20	1925
Copley Plaza Hotel, Merry-go-round, Copley Square	Carrier	23	1934
Crimson Grill, 1100 Boylston St.	Lippmann Inc.	11	1936
English Tea Room, 29 Newbury St.	Frigidaire	3	1933
Essex Food Shop, 3 Essex St.	Carrier	15	1935
Eichel's Spa, Winter Place	Westinghouse	10	1936
Eichel's Spa, Cornhill	Westinghouse	7½	1936
Horace Ford, Winchester	Frigidaire	3	1936
The Georgian, Inc., 252 Huntington Ave.	Braeman-Dow	25	1932
Gilchrist Marble Spa, Winter St.	York	23	1936
Harvard Gardens, Allston	Westinghouse	45	1935
High Hat, Columbus Ave.	Frick	20	1935
Hofbrau, Tremont St.	Fairbanks-Morse	17	1936
H. P. Hood, 9 Hawley St.	York Ice Mach.	55	1935
Hotel Bellevue, 21 Beacon St.	Kelvinator	9	1936
Hotel Essex, 695 Atlantic Ave.	Westinghouse	10½	1936
C. F. Hovey, Summer St.	General Electric	8½	1935
Huntts Restaurant, Beacon St.	C. J. Cox	10	1936
Huylers, 145 Tremont St.	York Ice Mach.	12	1934
Kenmore Hotel, Commonwealth Ave.	Kelvinator	70	1935
Levaggi's, Massachusetts Ave.	General Electric	21½	1935
Litchfield's Sea Grill, Summer St.	Westinghouse	10	1935
Manger Hotel, North Station	Carrier	15	1932
Mayfair, 54 Broadway	York Ice Mach.	22	1933
Mayflower Doughnut Co., 172 Tremont St.	Ilg	5½	1933
Myles Standish Hotel, Bay State Road	Boston Ice Co.	3	1935
Dorothy Muriel's, 127 Tremont St.	Frigidaire	23	1934
Dorothy Muriel's, Summer St.	Frigidaire	6½	1934
Old Oyster House, Union St.	M. J. Flaherty	10	1936
Parker House, Tremont St.	Ilg	20	1933
Patten's Restaurant, 41 Court St.	Frigidaire	38	1933
Hotel Puritan (Old Boston Room) Commonwealth Ave.	York Ice Mach.	16	1934
Penthouse, Stuart St.	Frigidaire	3	1934
Ritz Carlton Hotel, Arlington St.	Kelvinator	18	1934
Rosoff's & Co., Summer St.	Westinghouse	22	1936
Schrafft's, 16 West St.	Frick	115	1934
Schrafft's, 356 Boylston St.	Frick	43	1933
Schrafft's, 11 Summer St.	Auto. Ref. Co.	32	1936
Seville, 180 Boylston St.	Universal Trane	33	1934
Sharaf's, Stuart St.	Auto. Ref. Co.	16½	1936
Spanish Shop (Jordan Marsh) Washington St.	York Ice Mach.	18	1935
St. Clairs, 140 Federal St.	Frick	5½	1935
St. Clairs, Brookline	Frigidaire	11½	1934
Statler Hotel (Cafe Rouge) Park Square	Frigidaire	9	1934
Steuben's, 124 Boylston St.	York Ice Mach.	47½	1934
Theatrical Club, Tremont & Warrenton Sts.	Frigidaire	3	1933
Tremont Plaza, 179 Tremont St.	York Ice Mach.	65	1934
Waldorf System, 121 Federal St.	Auto. Ref. Co.	16½	1936
Waldorf System, 123 Causeway St.	Auto. Ref. Co.	20	1936
Walter's Inc., Brookline	Frigidaire	10	1933
Touraine Hotel (Cafe Royal) Tremont & Boylston Sts.	York Ice Mach.	30	1935
Victoria Hotel (English Hunt Club) Dartmouth St.	Boston Ice Co.	3	1934

Residences (59)

Mr. John B. Buttrick, Concord	General Electric	1½	1936
Mr. Winslow Churchill, Arlington	Frigidaire	1½	1933
Mr. Benj. Green, Brookline	Frigidaire	4	1935
Dr. A. C. Hall, 372 Marlboro St.	Frigidaire	1½	1933
Prof. O. C. Koppen, Newton	General Electric	½—⅛	1936
Mr. Henry G. Lapham, Brookline	General Electric	5½	1935
H. W. Marsh, Winchester		1½	1935
Mr. Benj. E. Morse, Canton	Frigidaire	1½	1933
W. H. Nichols, Waltham	Brunswick-Kroeschell	9½	1936
C. J. O'Malley, Newton	Frigidaire	11½	1933
John O'Sullivan, Lincoln	Frigidaire	3⅛	1935
J. W. Power, Arlington		½	1934
Mr. J. Cheney Wells, 50 Commonwealth	Ilg	½	1934
Six Residences	Boston Ice Co.	each 5	1934
Forty Residences	Carrier	each ½	1933

Beauty Shops and Barber Shops (5)

Conrad & Co., 25 Winter St.	Frigidaire	27	1933
Filene's Barber Shop, Washington corner Summer St.	Universal Trane	10	1933
Parker House Barber Shop, Tremont St.	Ilg-York	5½	1935
Ritz Carlton Hotel, Arlington St.	Universal Trane	15	1934
R. H. Sterns, Tremont St.	Westinghouse	17	1934

Stores, All Types (38)

Name and Address	Installation	Horsepower	Date Installed
Bell Hosiery Co., Washington St.	Westinghouse	21½	1936
Bond Clothing Co., 620 Washington St.	Adams Eng. Co.	40	1935
Cobb, Bates & Yerxa, Summer St.	Carrier	30	
Coes & Young, 56 School St.	Westinghouse	2½	1936
Crawford Clothing Co., Washington St.	Ilg Fans	10	1935
Emmett's, Washington St.	Frigidaire	3½	1935
Fanny Farmer, Inc., Tremont St.	Westinghouse	2	1936
Wm. Filene's Sons Co., Summer and Washington Sts.	Carrier	2,515	1934
Florsheim Shoe Co., Washington St.	York	3½	1936
Grover Cronin, Waltham	York	35	1935
Grover Cronin, Waltham	York	60	1936
I. J. Fox, Washington St.	Ingersoll-Rand	170	1935
I. J. Fox, Washington St. (additional)	Ingersoll-Rand	20	1935
Howard Clothing, 605 Washington St.	York	18	1936
Hudsons, Washington St.	York	18	1936
John Irving Shoe Store, 505 Washington	Trask	12	1936
Kakas, Newbury St.	Frigidaire	3½	1935
Kay Jewelry Co., 594 Washington St.	Frigidaire	8½	1934
S. S. Kresge, Washington St.	Wittenmeier	128	1934
Leeds, Winter St.	York Ice Mach.	20	1934
Lerner's, Washington St.	Carrier	11	1934
Liggetts, 474 Washington St.	Carrier Eng. Co.	35	1936
Lincoln, Waltham	York	24	1935
Louis Clothing Store, 123 Stuart St.	Frigidaire	4	1936
E. F. Mahady, 851 Boylston St.	York	6	1934
Peck & Peck, Arlington St.	Carrier	11	1936
Joseph Plotkin, Bolyston St.	General Electric	3	1936
C. L. Richardson, 631 Atlantic Ave.	York	6	1936
Scott Furriers, Inc., 38 Winter St.	York	70	1934
Solby-Bayes, West St.	Westinghouse	1½	1936
South Boston Market, South Boston	York	35	1935
Supreme Market, Dorchester	York	43	1935
Washington Jewelry Co., 365 Washington	C. J. Cox	12	1936
Washington Jewelry Co., 503 Washington	C. J. Cox	6	1936
Wilbur Shoe Store, 166 Tremont St.	York	6	1936
Wilson Shoe Store, Washington St.	York	15	1936
Woolworths, Inc., 490 Washington St.	York	150	1936
Woolworths, Inc., 55 Summer St.	York	55	1936

Offices (41)

Aubin-Spencer Corp., Dorchester	Frigidaire	1½	1933
W. C. Baylies' Office, 70 State St.	Ilg	⅛	1934
Boston Safe Dep. & Tr. Co., 100 Franklin	C. J. Cox	12	1936
Brookline Trust Co., Brookline	General Electric	16	1934
Christian Science Church, 107 Falmouth	Carrier	225	1933
Colonial Tanning, 207 South St.	General Electric	21	1935
Continental Baking Co., Roxbury	Sturtevant	5	1930
Davenport, 10 P.O. Square	Frigidaire	½	1936
G. J. Esselyne Co., Inc., 865 Boylston St.	General Electric	½	1936
First National Stores, 928 Beacon St.	York	10	1934
Five Cents Savings Bank, 30 School St.	Boston Ice Co.	7½	1934
Ford Motors, Somerville	York	50	1936
Fox Film Co., Broadway	York (2 fans)	15	1935
French, Shriner & Urner, South Boston	York	6½	1936
H. P. Gurney, Brookline	Frigidaire	1½	1934
Hale & Dorr, State St.	Frigidaire	½	1936
Harvard Sch. of Public Health 25 Shattuck St.	Sturtevant	10	1928
Hayden Stone & Co., 75 Federal St.	Westinghouse	15	1933
Mr. Hayward, John Hancock Life Ins Co. Park Square	Strang	1	1934
Hodgman Rubber Co., Framingham	Frigidaire	1½	1933
Mr. Hosmer and Mr. Comerford, 182 Tremont St.	Westinghouse	5½	1935
Dr. T. P. Kendrick, Brookline	Westinghouse	½	1935
William Kennedy, Summer St.	Frigidaire	½	1935
Natick Cooperative Bank, Natick	General Electric	4	1935
New England Tel. & Tel. Co., 40 Oliver	York	5	1934
New England Tel. & Tel. Co. Harrison Ave. & Essex St.	York	3	1935
Dr. Francis Newton, 319 Longwood Ave.	Strang	½	1934
Old Christian Science Pub. Co., 107 Falmouth St.	Carrier	½	1934
Old Colony Trust Co., Court St.	Frigidaire	10	1935
Dr. Oswald A. Parker, Wakefield	Strang	½	1935
Mr. Sherrard, Parker House, Tremont St.	Ilg	½	1934
Reed Murdock Co., Somerville	General Electric	5½	1935
Second National Bank, Federal & Franklin Sts.	Westinghouse	7½	1934
Mr. A. Shapiro, 179 Lincoln St.	Frigidaire	1½	1934
Shepard Broadcasting System, 651 Beacon	Westinghouse	33	1935
United Business & Investment Service, 210 Newbury St.	Carrier	13	1934
United Drug Co., 43 Leon St.	Frick	10	1935
United Drug Co., 43 Leon St. (additional)	Frick	92	1935
United Electric Controls Co., South Boston	Westinghouse	½	1934
Webster Atlas Nat. Bank, 199 Washington	York	3½	1936
York Ice Mach. Corp., 200 Causeway St.	York	10	1935

Undertakers (3)

Fudge & Sons, Somerville	Carrier	3½	1935
Short & Williamson, Allston	Westinghouse	10	1935
Waterman Funeral Parlor, 497 Commonwealth Ave.	Westinghouse	11	1936

Miscellaneous (17)

Audition Room, 182 Tremont St.	Westinghouse	1½	1935
Eastern Mass. Bus Term, Haymarket Sq.	General Electric	19½	1936
Edison Auditorium, 39 Boylston St.	Frigidaire	28	1934
Forbes Lithograph Co., Chelsea	Carrier	250	1935
George Green, Ashland	York	13	1935
Herald-Traveler Bldg., Mason St.	Sturtevant	32	1932
Hildredth Candy Shop, 549 Albany St.	York	18	1936
Howes Bros., 321 Summer St.	York	15	1935
Jordan Marsh Co., Washington St.	Campbell	1½	1933
Massachusetts General Hospital, Charles & Fruit Sts.	General Electric	½	1935
Meloripe Fruit Co., Long Wharf	York Ice Mach.	40	1932
Museum of Fine Arts, Huntington Ave.	Frigidaire	1	1933
N.Y. N.H. & Hartford R. R.	Boston Ice Co.	600 tons ice per week	1934
S. S. Pierce, Huntington Ave.	Frick	15	1935
Plotkin Bros., 364 Boylston St.	York Ice Mach. Co.	45	1936
Rice Building, 10 High St.	York	350	1936
South Station, Summer St.	Carrier	54	1935
R. H. White Co., Washington St.	Westinghouse	3½	1934

Industrial Installations

Miscellaneous Industrial Installations	405

200 Members Listed By Air-Conditioning Bureau of Boston

(Concluded from Page 1, Column 1)

aged membership is the low cost of dues, $2 per member. All expenses are paid by these dues, since the meeting place is supplied by the Edison company.

What are the objectives of the bureau, and what benefits do the members derive from its activities? Set forth in the constitution, the objectives of the bureau are (1) advancement of the use by the public of air-conditioning equipment; (2) ascertainment and making available to members and to the public of factual information, data, and statistics relating to air conditioning; (3) assistance to members in the promotion and sale of equipment and service.

A standard definition of air conditioning is incorporated in the constitution, and equipment which does not come under the definition of true air conditioning must be described under a limited nomenclature. Members of the bureau must agree to refrain from misrepresentation of facts and defamation of competitors.

Investigate Business Practices

The Board of Directors of the bureau has jurisdiction and authority to consider and investigate the business practices of any member, and may suspend or take disciplinary action against any member guilty of a violation of proper or ethical business practices, or for failure to furnish information.

Members of the bureau have the privilege of using the words "Member of Air Conditioning Bureau" in promoting the sale of equipment or service.

The bureau meets once a month—throughout the year, since the meeting room at the Edison company offices is air conditioned! Before the meetings as many members as possible meet for supper at a restaurant or tap room which has been air conditioned. With from 100 to 200 persons at such suppers, the proprietor gets a fine dividend on his investment, and his competitors who haven't air conditioned their establishments sit up and take notice.

Good speakers are obtained for the meetings, and much practical information is made available.

Grievances are always handled before the Board of Directors, never in open meetings, because it is very possible that prospects are likely to be present, and the bureau doesn't care to wash its dirty linen in public.

A very few corrective measures have been taken in connection with the advertising of some of the members, says Mr. Ricker, but these were taken in a friendly spirit.

Air Conditioning Exhibit

Among the promotional activities undertaken by the bureau was an Air Conditioning Exhibit, attended by 6,000 prospects.

Bureau members are making a concerted effort to impress upon prospects the futility of trying to "chisel down" the cost of an installation.

"The buyer is the chiseler," points out Mr. Ricker, "and we're trying to tell him that in so doing he is the one who really suffers, because if any skimping is done, it will show up in the operation of the system."

Edison Electric Illuminating Co. of Boston is itself doing an outstanding job of promoting the sales of air-conditioning equipment, although it does not merchandise such products itself. For the last three years it has put on a direct mail campaign directed to 10,000 prospects.

Testimonial Letters Used

This year the mailing pieces are in the form of illustrated testimonial letters, as was the 1934 literature. Last year the utility put out an elaborate illustrated booklet "Air Conditioning In and Around Boston," showing pictures of various installations. Winter air conditioning made tremendous progress in Boston last year, says Mr. Ricker, so a special campaign will probably be devised on residential winter systems this fall.

Also offered by the utility is a service to interested prospects which is "purely informative" as Mr. Ricker is quick to point out.

"To those who make inquiry we tell what equipment there is available and let the dealer or contractor do the rest."

The utility, however, does offer an engineering advisory service on wiring to air-conditioning contractors. Every effort is made to cut down this part of the cost, and to keep the contractor properly informed so that such costs will not go over what he has stipulated in his contract.

Mr. Ricker points out that because of the comparatively cool summers in Boston real effort has been needed to crack the year-'round conditioning market, but that some results are beginning to show now.

Shel Myers Predicts Air Conditioning Distributors Will Get Bigger Share Of Total Volume & Tells Why

MANSFIELD—The smaller stores and shops will continue to predominate the air-conditioning installations this year, because "it is no longer the retail merchant's problem how long he will be able to get along without installing air conditioning in his establishment, but how long he will be able to remain in business without it," S. H. Myers, manager of air-conditioning sales of Westinghouse Electric & Mfg. Co., predicted in a discussion of "Some Well Known But Little Publicized Facts About the Air-Conditioning Business."

He also predicted that the number of installations made by air-conditioning manufacturers' own organizations would drop off, beginning this year, and that most of the business of the future would be done through local independent air-conditioning distributors.

Sales Better This Year

"According to reports from various sources, including manufacturers of equipment and public utilities throughout this country, the air-conditioning industry is stepping along at a very rapid clip," Mr. Myers said. "For the first four months of this year, 1936, according to a report issued by the Department of Commerce, the monthly statistics on the value of orders booked for air-conditioning systems and equipment total $11,667,129. The total of these orders booked came from 98 manufacturers, who represent a new series resulting from the expansion of the scope of the inquiry, and the total value of orders booked by these same manufacturers during March of this year amounts to $3,477,752 as compared with $2,611,241 for February, 1936; an increase of 33.2%.

"There are approximately 175 manufacturers of air conditioning equipment in business today, of which approximately 18 manufacturers produced unit systems of the self-contained type, central station systems which include evaporators and compressors remotely installed, and of this group the value of orders booked for the first four months of this year amounted to $5,517,994 of the $11,667,129 which was booked by the total group of the 98 aforementioned.

23.4% Gain Over 1935

"It must be pointed out that the 175 manufacturers of air-conditioning systems and equipment comprise all manufacturers who produce accessories for complete installations, such as condensing units, evaporators, electrical control, air washers, filters, humidifiers, various types of fans, unit heaters, etc. During 1935 this group of manufacturers had a total record of orders booked in the amount of $48,244,800.

"For the first three months of 1936, an accumulative report of 27 manufacturers of condensing and evaporator units, the total net sales showed an increase of 23.4% over the same period of 1935. The Westinghouse per cent of increase was 91 for the same period. The first four months of 1936 the industry showed 23.4% increase while the sale of Westinghouse equipment increased 71.4%.

Summary of 1935 Installations

"Year-'round air conditioning sales during 1935, which amounted to $48,244,800, as previously stated, were divided like this:

"Small stores and shops	21.9
"Large stores, theaters and public buildings	19.9
"Industrial installations	19.7
"Complete residential all-year equipment	17.9
"Railway cars	10.7
"Single room or office units	9.9
	100.0%

"The small stores and shops will continue to predominate in the percentage of installations," Mr. Myers predicted, "because it is no longer the retail merchant's problem as to how long he will be able to get along without installing air conditioning in his establishment, but how long will he be able to remain in business without it. It is my prediction that the above first two mentioned applications will at the end of this year, 1936, represent more than one-half of the total installed applications throughout the country instead of 41.8% as was the case last year.

Types of Distributors

"One of the problems facing the manufacturers of air conditioning equipment is proper distribution. We find that the following classifications are responsible for the air conditioning installations made in this country during 1935:

"Manufacturer's own organization	49%
"Plumbing, heating and ventilating contractors	20
"Refrigeration distributors	9.3
"Air conditioning accessory distributors	9.0
"Engineers and contractors	6.2
"General home appliance distributors	2.4
"Utilities	2.2
"Oil burner and stoker dealers	1.9

Predicts Reduction in Number

"It is obvious that because of air-conditioning selling and installing requiring specialized knowledge of the business, the above classification of outlets will be reduced as time goes on. In my opinion the first mentioned classification, that of manufacturers' own organizations, will be materially reduced in the number of installations made so that at the end of 1936 I predict that instead of 49% it will be somewhere in the neighborhood of 30%, and the second item of classification will have increased to somewhere in the neighborhood of 40%. My prediction is based on the facts that the purchasers of air-conditioning installations have all the advantages of local buying because:

"1. The local air-conditioning distributor knows local conditions, weather, buying habits, and people.

"2. He studies each location carefully, consults with store management, gathers all the facts affecting the specific installation.

"3. He designs a system to fit specific needs.

"4. He takes a personal interest in every installation, because satisfaction controls his future sales.

"5. He times the installation to fit conditions.

"6. He knows local building codes, labor conditions.

"7. He avoids delays and expense by using local labor and materials.

"8. He gives you capable maintenance service, as near as your telephone.

"9. He cooperates with you in merchandising your installation, making it more profitable.

Requirements of Installation

"With the acceptance of air conditioning has come a better understanding of what really is required in air conditioning," Mr. Myers said. "Every job is different. A system must be properly engineered to fit it. For instance, one installation selling for an installed price of $8,954 required:

"1. Original engineering contact.
"2. Preliminary survey.
"3. Contacting architect.
"4. Preliminary drawing.
"5. Preparation of estimate.
"6. Preparation of proposal.
"7. Contracting owner, architect and tenant.
"8. Final survey.
"9. Final drawings.

"To all of which a total time consumed represented 160 man hours with a cost in direct time and materials of $300, which did not include some selling expense and engineering adjustments.

Proper Engineering Important

"This installation was properly engineered so that the ultimate purchaser received an air conditioning installation that was entirely satisfactory and, having been properly engineered and surveyed, he was not undersold or oversold, but received the correct amount of cooling capacity required by the particular application, and an installation that can be profitably written off in a short period or be off-set by other advantages."

To show air conditioning's possibilities as a year-'round business, the speaker listed a number of important jobs installed during the so-called "off season." These included:

Peoples Drug Co., Washington, D. C.—January.
20th Century Fox Films, Memphis, Tenn.—February.
Huyler's, Chicago.—January.
Rustless Iron Co., offices, Baltimore.—November.
NBC Studios, Chicago.—October.
Varsity Theater, St. Louis.—September.
United Electric Co., display floor, New Haven.—September.
Tribune Tower, Chicago.—January.
S. S. Kresge Co., Springfield, Ill.—January.
Waterman Pen Co., Boston.—February.
Chapin Bldg., Lincoln, Nebr.—January.
F. W. Woolworth Co., Providence.—November.
Beck's Tavern, Hagerstown, Md.—April.
Krauss Department Store, New Orleans.—November.
Electric Auto Lite Office Building, Toledo.—December.

"The manufacturers of air-conditioning equipment," Mr. Myers concluded, "principally those manufacturers producing condensing units and evaporators who have followed the practice of carefully engineered installations, and insisted that the ultimate user listen to their engineers in letting them give them what their applications demand—systems made up of the correct equipment properly engineered and assembled to meet the particular requirements, will undoubtedly create an expanding and profitable market for many industrial products such as motors, controls, pumps, insulation, sheet metal, fans and blowers, valves and fittings. In this respect a directory of air-conditioning equipment for commercial and industrial purposes lists several hundred such manufacturers' names."

Trane Makes Changes In Climate Changer

LA CROSSE, Wis.—Trane Co. has added several new features to its "Climate Changer" equipment to present a more efficient and compact year-'round air conditioner for residential and small building use.

A new target type humidifier, said to eliminate clogging of spray nozzles and coating of cascade trays, has been added. In operation, a fine stream of water at a high velocity is directed against a specially designed target where the force with which it strikes spreads it in a fine mist throughout the humidifier chamber.

Also added is a half-inch layer of insulation lining the bottom of the unit, where cold condensation water is drained from the dehumidifying coils. This is said to prevent sweating, and to eliminate possibility of damage to any goods stored beneath the unit.

Special arrangements permit easy access to the interior of the unit. Spring clamps hold the filter door shut; and three remaining panels, each held in place by two large screws, grant access to coils, blowers, and humidifier.

A lighter, sturdy base makes the unit less cumbersome, and facilitates installation. To accomplish this, the motor was moved from its former position on an extension of the heavy base to an individual mounting on the side of the unit, where servicing is easier.

Six convenient methods of suspension have been designed, allowing the installer a wide range from which to fill the particular requirements of each job. General cycle of operation, providing winter heating, humidifying, and filtering, and summer cooling, dehumidifying, and filtering, remains the same.

Trane Co. has added a small conditioner of the "Climate Changer" series to its line for use on split systems.

Although the new unit will be sold separately, it is being built especially for the Trane Dual System, one of the five residential air-conditioning systems marketed by the company.

Number 0 unit, as it is called, provides for complete year-'round air conditioning for favorite rooms. In the winter, it heats, humidifies, and filters the air, and in the summer, reverses the cycle by cooling, dehumidifying, and also filtering. It is equipped with Trane extended surface coils for steam and hot water heating, and cooling with any standard refrigerant.

Store Finds Losses from Soiled Corsets Decreased By Air Conditioning

OMAHA — Increased buyer-comfort and a decrease in the amount of merchandise returned to the factory soiled are the results of air conditioning the corset department of Herzberg's department store here, reports Miss Dorothy Hofeld, manager-buyer.

Miss Hofeld has found that not only can the comfortable customer be sold a higher priced garment than she would ordinarily buy, but that it is not as hard to convince her of its proper fit.

When the temperature is high, corsets become quickly soiled as a result of handling by perspiring hands, and have to be returned to the factory. Since the installation of the air conditioning, Herzberg's have had no difficulty with perspiration marks on merchandise, the manager says. The store plans to extend the conditioning system to other departments.

Kansas Inspection Bureau To Have Cooled Offices

TOPEKA, Kan.—Top floor of the three-story insurance building here, occupied by offices of the Kansas Inspection Bureau, is being equipped with a 20-ton air-conditioning system by Capital Iron Works, contractor and distributors of Frick equipment.

The Insurance building, one of the city's oldest, was built in the late '80's. In 1926 the entire structure was remodeled and the third story added.

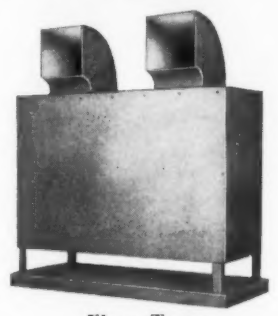
J. W. Bostwick, air-conditioning engineer for Capital Iron Works, is in charge of the installation. The 20-ton Frick compressor will be placed on the third floor. Capacity of the system will be 10,500 c.f.m. of air, and its cost will be approximately $6,500.

The Buyer's Guide

Special rates apply to this column only.
Write Advertising Dept. for full information.

PEERLESS AIR CONDITIONING UNITS

Band Box Type



Floor Type

Ornamental Comfort Cooler for use in fine offices, shops and homes.

Peerless Standard Fin Coils, with "rifled tubing" and many other exclusive features, are used in all models.

Heavy Duty Air Conditioner for use with duct work. Also available in ceiling type.

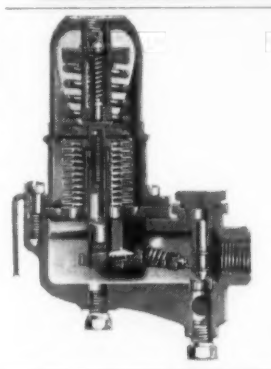
Write for prices and catalog

PEERLESS ICE MACHINE CO.
CHICAGO 515 W. 35th St. — TWO FACTORIES — NEW YORK 43-00 36th St., L.I.C.
Representatives in all principal cities

TYPE KR— 30 MODELS
RANCOSTAT
—the Stainless Steel Thermostat

A precision unit, engineered right! Extremely compact — yet Rancostat has liberal clearances for all working parts. Friction reduced to a minimum. All parts strong, rigidly mounted. Not a chance of distortion. Dependable accurate controls, day in, day out. Write for Bulletin KR.

The Automatic Reclosing Circuit Breaker Co.
Columbus, Ohio



STANDARD REFRIGERATING APPLIANCES

SNAP-ACTION MULTIPLE TEMPERATURE VALVES

The valve illustrated—S2V—regardless of range or differential setting opens and closes with a positive snapping action at any previously determined settings which are within its limitations. Exclusive feature is adjustable range of 20" of vacuum to 60 pounds pressure in single valve. Differential is adjustable, varying from 15" of vacuum to approximately 29 pounds at the higher pressure ranges.

Write for Bulletin 17 for full information and detailed drawings.

AMERICAN INJECTOR COMPANY 1491-14th. street, Detroit, Mich.

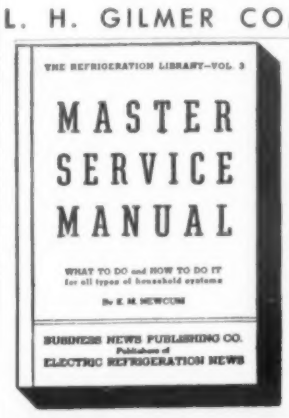
GILMER V-Belts

QUIET EFFICIENT LONG-LIVED

For electric refrigerators, washers, beer pumps, oil burners, compressors, air-conditioning units, etc. . . . Gilmer has a V-Belt to fit . . . from the largest stock of moulds in the world. Write for V-Belt catalog.

Gilmer BELTS

L. H. GILMER COMPANY, TACONY, PHILADELPHIA


THE REFRIGERATION LIBRARY—VOL. 3
MASTER SERVICE MANUAL
WHAT TO DO and HOW TO DO IT for all types of household systems
By E. H. NEWCOM
BUSINESS NEWS PUBLISHING CO.
Publishers of
ELECTRIC REFRIGERATION NEWS

The Master Service Manual ($3.00 per copy) includes the necessary instructions for servicing all the fundamental types of household systems. Detailed instructions for the servicing of more than a dozen "orphan makes" are also included.

The Refrigeration and Air Conditioning Specifications Book ($3.00 per copy) will contain detailed comparative data which every dealer, salesman, and service man has been wanting.

Combination Price for Both Books, $5.00

THE REFRIGERATION LIBRARY—VOLUME 4
REFRIGERATION and Air Conditioning SPECIFICATIONS
For ALL MODELS and MAKES HOUSEHOLD and COMMERCIAL
Including New Designs for 1936
BUSINESS NEWS PUBLISHING CO.
Publishers of
ELECTRIC REFRIGERATION NEWS

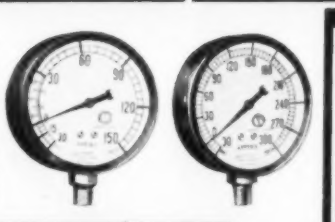
Refrigeration Instruments by Marsh

MARSH AMMONIA GAUGES are the standard of the industry.

Constructed with oil hardened chrome molybdenum bourdon tube, stainless steel and monel metal movement, magnified reading dial and rust-proof construction throughout.

Manufactured in all standard dial sizes and pressure ranges. If so desired, these instruments can be furnished with dial reading in pounds pressure per square inch and corresponding temperature scale for ammonia and for Freon.

All Marsh ammonia gauges are constructed with zero adjustment feature.



Jas. P. Marsh Corporation
2067 SOUTHPORT AVE., CHICAGO, ILL.

Air Conditioning

7 1-2 Ton Carrier System Used to Instruct Chicago Service School Students About Air Conditioning

CHICAGO—A 7½-ton Carrier air-conditioning installation is finding an interesting application in the shops and laboratories of Refrigeration and Air Conditioning Institute here.

The equipment is used primarily in teaching air conditioning to students of the school, as well as to give them something in the way of a working system on which to test their knowledge and obtain practical experience in operation, maintenance, and service problems.

Another and unusual job which the equipment must perform is in creating weather conditions really rivaling the recently popular song, "June in January."

Extremes of temperature down to about 40° F. are avaliable for about 25,000 cu. ft. of space inside of which is built a completely air-conditioned modern bungalow, 13x20 feet, with 7-ft. ceilings, insulated throughout. The big installation dictates *outside* conditions, and the bungalow's own 2½-ton conditioning system must meet these requirements and maintain proper *inside* conditions.

Since the RACI laboratory training schedule calls for problems in planning, estimating, and layout of air-conditioning systems, the installation is valuable in permitting direct tests on actual cases of heat leakage, insulation quality and thickness, moisture and humidity, moisture condensation, coefficient of heat transfer, wall construction comparisons, heat load, control of humidity, and control of temperature.

Range of conditions under which the system must operate is illustrated by a review of the control facilities provided for RACI students:

A pneumatic control group, hygrostat humidity control, pilot thermometers, winter and summer changeover control, automatic temperature control, dial control for fresh air intake, dial control for air distribution ducts, pneumatic motor control to fresh air inlet, control of steam to heating coils, and pneumatic motor control to damper on recirculated air duct.

In addition there are complete electrical controls, refrigeration controls, low and high pressure cut-outs, alarm systems, pressure gauges, and other instruments.

Temperatures can be raised or dropped far in excess of the comfort zone. The air can be made excessively dry or excessively humid, but inside the bungalow the proper condition can be maintained independently.

If a summer outside condition is desired in mid-winter, it can be created. If a winter condition is desired in summer, the temperature outside the bungalow can be dropped to approximately 40° F. Students working on the equipment are, therefore, not limited in their experiments and operations by having only current outdoor temperatures and conditions to work with.

Further variation in the heat load which the system must handle arises from the variety of commercial and industrial refrigeration machinery within the laboratory—all or any one of which may be in operation at any time.

Demands made on the system are perhaps more continuous and severe than would be met in any ordinary installation, since a certain amount of idle time might reasonably be expected for the average system in cool weather.

Delco-Frigidaire Sends Letters to Executives About Conditioners

DAYTON—In a personalized letter to business executives in various cities, Delco-Frigidaire Conditioning Corp. is calling their attention to the value of the company's room cooler as an aid to efficient, comfortable working conditions during summer weather.

The letter, after discussing the advantage of summer cooling to personal efficiency and comfort, urges the business man to get in touch with his Delco-Frigidaire distributor for information on equipment available for immediate installation.

A business reply card, accompanying the letter, carries the imprint of the local distributor.

Carrier Is Guest at Dedication of Hotel Conditioning System

CHICAGO—Willis H. Carrier, chairman of the board of Carrier Engineering Corp., was guest of honor at a luncheon June 30 celebrating the completion of additional air-conditioning installations in public rooms of Hotel Stevens here.

With the additions, it is claimed, the Stevens has the largest number of air-conditioned ballrooms, meeting rooms, public dining rooms, and lobbies of any hotel in the world.

Rufus C. Dawes, president of Stevens Hotel Corp., and Otto K. Eitel, managing director, presided at the affair. Guests included:

C. L. Rice, president of the Chicago association of commerce; J. C. Hines and R. B. Hayward of R. B. Hayward Co.; John Howatt, chief engineer of Chicago board of education; J. L. Neudorfer, vice president, O. I. Strickland, tubular sales manager, J. L. Grimes, general advertising manager, and J. M. Sullivan, Chicago district manager of Wheeling Steel Corp.; E. E. Adams, vice president of Pullman Co.; Scott Smith, president of Critchfield & Co.; and Arthur B. Hall and W. F. Krahl, directors of the hotel.

Analyzing the progress made by air conditioning in recent years, Mr. Dawes, who introduced the speakers, said the Stevens was taking another step forward in air conditioning the Grand Ballroom, largest in the world.

The new installation includes, in addition to the Grand Ballroom seating 3,500 people, the South Ballroom, the West Ballroom, and six private dining rooms. This, together with previously existing air-cooled rooms, brings the Stevens' total of conditioned assembly rooms to 11, with a seating capacity of 6,225 persons.

Previously air-cooled areas in the hotel included all the main floor lobbies, the Grand Stair Hall, all public dining rooms (Continental Room, Tap Room, Boulevard Room, and Coffee Shop), as well as the downstairs barber shop.

Birmingham Clothing Store Conditioned

BIRMINGHAM, Ala.—Shook & Fletcher Supply Co., Carrier agents, installed the year 'round air-conditioning system for the entire four floors of the recently remodeled store of J. Blach & Sons, men's and women's clothing concern here.

Central station electricity and steam make a boiler room and radiators unnecessary, and a combination direct expansion spray unit with constant control of temperature and humidity is used. No cooling tower was necessary with the evaporative condensers.

A summer temperature of 80° with a relative humidity of 50% is maintained with this 100-ton installation and a winter temperature of 70° with relative humidity of 40% is provided for. All air, both in winter and summer, is washed and filtered by an auditorium by-pass. A large percentage of the recirculated air, but none of the outside air, is by-passed.

Constant dew point regardless of other conditions is obtained through a five-stop control used on the compressors to maintain a constant coil temperature.

Two 40-hp. compressors, both with two-speed, two-winding motors, are automatically controlled by suction-pressure, and the variation in motor speed controlled by Minneapolis-Honeywell regulators.

Carrier universal, high velocity outlets discharge air at a velocity of 2,000 f.p.m. This high velocity is necessary in order to get distribution because the store is 67 ft. wide with the outlets mounted in one side wall. Horizontal and vertical vanes in the outlets insure uniform diffusion in all directions.

Martin Named Manager of G-E Air-Conditioning Products Division

BLOOMFIELD, N. J. — General Electric's newly organized product division of the air-conditioning department will be managed by Samuel Martin, Jr., reports J. J. Donovan, manager of the department.

The new division has been established to handle all matters pertaining to the installation and servicing of air-conditioning products, enabling the personnel of the commercial engineering division, which formerly handled such matters, to devote its time to air-conditioning sales applications, Mr. Donovan says.

Mr. Martin, a graduate of the University of Pennsylvania in 1925, entered the employ of the General Electric Co. that same year as a student engineer in the testing department at Schenectady. He joined the air-conditioning department in 1932, shortly after its organization.

14 Floors of New York City Office Building Now Equipped with Air Conditioning

NEW YORK CITY—With recent additions to the system installed several years ago, 14 floors of the building located at 22 East 40th St., owned by the 275 Madison Corp., are now equipped with year-'round air conditioning.

The conditioned area includes the space occupied by New York Trust Co. on the basement and first floor, as well as that housing the general headquarters of Johns-Manville Corp. Approximately 100,000 sq. ft. of rental area is served.

The system was designed and installed by Cooling & Air Conditioning Corp., Frick distributor. Owner's engineer on the job was Edward D. Martens, for several years associated with Thompson-Starrett Co.

Inside air conditions are guaranteed not to exceed 80° F. dry bulb and 50% relative humidity when outside conditions do not exceed 95° dry bulb and 75° wet bulb. To maintain these conditions approximately 285 tons of refrigeration are required. Evaporative water temperature, however, needs be no lower than 50°.

As outside conditions drop, it is desirable that lower inside conditions be maintained, which means a lower dewpoint, making it necessary to operate the refrigerating equipment at a lower evaporative temperature—43° water, in a typical case. At this lower evaporative temperature, capacity of the refrigerating system drops to 254 tons. Only the decrease in transmission load offsets this drop in available tonnage.

As the outside wet bulb temperature falls below 70° F., the heat load represented by the fresh air decreases, and a further advantage is gained. Transmission load amounts to about 30% of the total heat load, or about 85 tons. Fresh air load changes little between 75° and 70° wet bulb, since the wet bulb temperature maintained inside decreases.

The system uses two dehumidifiers, one located on the seventh floor, taking care of 60% of the entire load and being used for the sixth to thirteenth floors inclusive; and the second handling the spaces from the fifth floor down, including the bank space.

At full load, 770 g.p.m. of 50° water are supplied by the primary pumps to the dehumidifier on the seventh floor, and 550 g.p.m. of water at the same temperature to the one on the second floor.

Secondary pumps of equal capacity on the seventh and second floors circulate the water to the two dehumidifiers, taking a mixture of recirculated and chilled water, or all of either, in accordance with requirements. The mixture is controlled by the dewpoint thermostats, which actuate valves in each chilled water line.

In the rooms where the dehumidifiers and pumps are located, there is also a fresh air intake, temperating heaters, and a main supply fan. The fan draws through the dehumidifier an automatically controlled mixture of outside and recirculated air, and distributes it through a riser to the booster fan units, one of which is on each floor.

Distribution of conditioned air is made through duct work, well concealed in the treatment of ceilings and partitions. Sound absorbers are fitted into the supply system to insure against the passage of fan room noise through the ducts and into the offices.

Air returns to the fan room on each floor through the corridors, the office doors being equipped with louvers to permit free exhaust of air to the passageway.

One of the many problems which arose on the job was the question of how to supply chilled water to the dehumidifiers located at different elevations without the use of a surge tank in the machinery room, and without subsequent loss of the benefit of the balanced head. This was taken care of in the design of the spray type water cooler; the evaporator tubes were divided, each section handling the amount of water required for one dehumidifier.

Another problem was how to avoid objectionable drafts in small offices occupied by a man and a secretary. Because of the difference in attire of the man and the woman, it was necessary to thoroughly diffuse the air. This was accomplished by using a special type of supply grille, the feature of which is the ability to adjust the direction in which the air supply leaves.

Cooling tower is of the air washer type and is located in the same basement with the refrigerating equipment. It consists of a double-bank spray-type air washer, a circulating pump, and a double-inlet fan. After being drawn through the sprays and eliminators, the air is discharged by the fan into a shaft which rises the full 40-story height of the building.

Air for cooling the condenser water is drawn from the street through sidewalk gratings, and passes freely to the basement, thence to the open intakes of the cooling tower fan. This tower is designed to cool 960 g.p.m. of water from 99° to 90° C. when the wet bulb does not exceed 75° F. Cooling tower fan has a capacity of 90,000 c.f.m. and is driven by a 30-hp. motor. The cooling tower pump forces the condenser water from the washer tank through the horizontal shell-and-tube Freon-12 condenser and back to the washer sprays.

Refrigerating equipment includes two Frick Freon-12 compressors, a 15x10 and a 11½x8, driven by motors of 225 and 125 hp., respectively. The MS condenser is 38 inches in diameter and 19 feet long. A shell-and-tube vessel 42 inches in diameter and 18 feet long also cools the water required for air conditioning.

The Freon-12 is kept in circulation through the sprays of this water cooler by a 300-g.p.m. centrifugal pump. Receiver for the refrigerant is 24 inches in diameter and 14 feet long.

Auxiliaries include high and low pressure cutouts, a thermostat, two water failure switches, a Freon-12 oil separator, three electric control valves, a float switch, insulation for the water cooler and suction lines, and 1,900 lbs. of Freon-12.

Subscription Rates

U. S. Combination Rates

		In combination with a subscription to Electric Refrigeration News
Electric Refrigeration News	$3.00	
Any one book	3.00	$ 5.00
Any two books	5.00	6.50
Any three books	6.50	8.00
Any four books	7.50	9.00
All five books	8.50	10.00

Canadian Combination Rates

Electric Refrigeration News	$3.00	
Any one book	3.50	$ 5.50
Any two books	5.50	7.00
Any three books	7.00	8.50
Any four books	8.00	9.50
All five books	9.00	10.50

Foreign Combination Rates

Electric Refrigeration News	$5.00	
Any one book	3.50	$ 7.00
Any two books	5.50	8.50
Any three books	7.00	10.00
Any four books	8.00	11.00
All five books	9.00	12.00

Send this order today - - -

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

Date.....

Enclosed is ..... Please send the following:

- ☐ The weekly issues of Electric Refrigeration News for one year.
- ☐ The Master Service Manual.
- ☐ Refrigeration & Air Conditioning Specifications.
- ☐ The Refrigeration Engineers Manual.
- ☐ The 1935 Refrigeration & Air Conditioning Directory.
- ☐ The 1935 Refrigeration & Air Conditioning Market Data Book.

Name .....

Attention or
In Care of .....

Street .....

City ..... State .....

HERKIMER INSTITUTE
1819 Broadway, New York City
offers theory and shop training in servicing, installation, surveys, of all makes refrigeration, oil burners, and air conditioning equipment.

VIRGINIA SMELTING CO.
WEST NORFOLK VIRGINIA
EXTRA DRY
ESOTOO
LIQUID SULPHUR DIOXIDE
V-METH-L
VIRGINIA METHYL CHLORIDE
131 State St. Boston—76 Beaver St. New York

BRUNNER
Send for the New
REFRIGERATION CATALOG
Eight Models of Compressors
Forty-one Models of Highsides
from 1/6 H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

EVAPO CONDENSER ASSURES BIG MONEY!
New Profit Item, with Ready Market
Compact—Complete—Easy to Install
FOR USE WITH ALL MECHANICAL REFRIGERATION UNITS
A combined water tower and highly efficient condenser.
LOW ORIGINAL COST... ECONOMICAL IN OPERATION
Completely pays for itself in a short period by savings in water and power consumption.
DEALERS NOTICE—Write for complete information and dealer's set-up.
THE BRUS COMPANY
215 EAST 20th ST. KANSAS CITY, MO.

Commercial Uses

Line of Evaporative Condensers Marketed By Buffalo Forge Co.

BUFFALO—Buffalo Forge Co. has recently put on the market a line of evaporative condensers, type ECC, available in compressor capacities of from 4½ to 52 tons. The units are suitable for either Freon or methyl chloride, and can be arranged for indoor or outdoor installation.

Use of the equipment, it is claimed, will effect a saving of approximately 90% of the water used for direct cooling of condensers. Make up water required will not exceed .03 g.p.m. per ton of refrigeration, it is said. Necessity for cooling towers is eliminated, effecting a considerable saving in space.

The evaporative condensers are designed for high efficiency with large coil surfaces, low air velocities, and consequent low power consumption.

Tank is of welded steel, casing and eliminators of heavy galvanized copper bearing steel. Fans are of multi-blade type, with ball bearings. If necessary, coils and eliminators can be removed through this opening. A cast iron water-tight inspection door, with glass panel, is also furnished.

Coils are Aerofin, both tubes and fins being of copper. Arrangement of the coil permits bleeding liquid as condensed, increasing effectiveness and reducing the pressure-loss. Bleeding the liquid at several points permits use of more surface in a given size unit, increasing efficiency and lowering initial cost.

Nozzles are of bronze, of two-piece construction, with large passages to prevent clogging. To insure continuous operation of the spray system, a removable screen is provided in the tank.

Pump is of the "Buffalo" close-coupled type, single suction, bronze fitted, connected directly to the motor and eliminating pump bearings. The sump or tank is provided with overflow and drain connections, as well as an automatic make-up valve which maintains a constant water level. A wire screen over the air inlet prevents leaves and trash from being drawn into the unit.

Bogle Will Head Sales For Taylor Freezer

BELOIT, Wis. — Appointment of John Bogle to succeed John Tyndal as sales director of Taylor Freezer Corp., counter-freezer manufacturer, was recently announced by company officials.

Mr. Bogle was connected with the Udylite Co. of Detroit, and prior to that was sales director for the Absolute Con-Tac-Tor Corp. of Beloit, and Elkhart, Ind.

Stewart Builds 2-Ton Ammonia Machine

LOS ANGELES—Stewart Ice Machine Co. has recently put on the market a self-contained ammonia refrigerating unit, recommended for heavy-duty application in markets, dairies, fruit and vegetable storage, hotels, restaurants, chemical works, bakeries, and beverage plants.

The compressor is capable of producing approximately 2 tons of refrigeration per 24 hours, at 20 lbs. low side pressure and 155 lbs. high side pressure. It has two cylinders, with a bore and stroke of 2¾ inches, and 400 r.p.m. Motor is 3 hp., and condenser of the shell and tube type.

Anheuser-Busch Makes Ice Cream Truck Bodies

PEORIA, Ill.—Daisy Ice Cream Co., a division of Velvet Freeze Ice Cream Co., St. Louis, had added to its motor truck fleet two 1,080-gallon ice cream bodies manufactured by Anheuser-Busch, Inc., using Copeland refrigerating systems and powered by Century Whitaker-Upp electrical power systems.

The new equipment will be used in transport service in and out of metropolitan Peoria.

Joins Mills

JOHN J. TYNDAL

Former vice president of Taylor Freezer Corp. has been appointed eastern sales manager of Mills Novelty Co.

* * *

Tyndal & Hightower to Direct Sales Districts For Mills Novelty Co.

CHICAGO—Mills Novelty Co. has announced the appointment of John Tyndal as eastern sales manager, and Charles W. Hightower as western division sales manager. Both men will have their headquarters in Chicago.

Mr. Tyndal was former vice president of the Taylor Freezer Corp. of Beloit, Wis., and previous to that was connected with the General Refrigeration Co., also of Beliot.

For the past 23 years, Mr. Hightower has been operating head and in charge of sales of several large ice cream manufacturing plants in Louisiana and California, including Louisiana Milk Products Co., Acme Ice Cream Co., San Francisco, and Central Dairies, Fresno, Calif.

Westinghouse Small Motor Division Moves to Lima

SPRINGFIELD, Mass.—Due to the necessity for expanding production facilities of its Springfield works in merchandising lines, particularly refrigeration and air-conditioning units, Westinghouse Electric & Mfg. Co. announced last week that it would transfer the manufacture of small motors from its local plant to Lima, Ohio.

Westinghouse has acquired a plant formerly owned by Relay Motors Corp. at Lima, and will start installation of machinery required for the manufacture of small motors immediately. Production at the new plant is expected to be under way by the first of next year.

The plant will be under the direction of R. F. Frenger, manager of the company's small motor division.

In addition to increased manufacturing facilities made possible by the move, Westinghouse officials say that the new location will have the advantage of being closer to the mid-west market for small motors, as well as being near the source of much of the material required.

Buildings at the Lima plant cover approximately 300,000 sq. ft. of floor space, are of single story construction, and well suited to requirements of motor manufacture. All Westinghouse motors for home appliance equipment, including refrigerators, washers, ironers, and vacuum cleaners, will be produced in the new factory.

Rehabilitation at the Lima plant include installation of new machine tool equipment, electric wiring for individual drive, and modernization of lighting equipment. Production facilities, say Westinghouse officials, will be about 50% greater at Lima than those now in Springfield.

Brus to Market Line of Evapo-Condensers For Commercial Jobs

KANSAS CITY, Mo.—A combined water tower and condenser for use with all mechanical refrigeration units, known as the Evapo-Condenser, has been developed by The Brus Co., a recently incorporated concern operating under license from Strang Air Conditioning Corp.

Under the management of Emile T. Brus, formerly a vice president of Strang Air Conditioning Corp., The Brus Co. will handle national manufacture and distribution of the new device, and will also act as selling agent for Strang in the distribution of the company's line of portable room coolers and air conditioners.

Distribution will be carried on primarily through commercial refrigeration dealers and distributors, it was announced.

Designed primarily for indoor use, the Evapo-Condenser is a compact unit, complete with condenser-coil, water pump, fan, motor, and casing.

Several advantages are claimed for the new equipment, chief among which is a saving of up to 98% of the condenser water that would have to be used without it.

The new unit is also said to increase refrigeration in proportion to electrical current consumed, by cooling the refrigerant lower than is generally possible by the use of running water from the mains in hot summer months. This, it is claimed, means shorter periods of operation and consequently lower wattage consumption.

It is also said to permit use of efficient, economical water-cooled refrigeration for air-conditioning or commercial purposes where running water is not available, where water shortage exists, where existing risers or water lines do not have sufficient capacity to provide for fast-growing requirements, and when, because of high temperatures, running water is an unsatisfactory cooling medium.

Instantaneous Water Cooler Developed By Larkin

ATLANTA — Larkin Refrigeration Corp. has just brought out a new line of instantaneous water coolers, designed for use in bottling plants, bakeries, air-conditioning systems, and other water cooling installations requiring large capacities.

Complete line covers 31 models of coolers, ranging in capacity from 100 to 1,500 gallons per hour.

A feature of the Larkin water cooling units is the control system, which automatically shuts down the brine circulating motor simultaneously with the shutdown of the compressor.

Outlet water temperatures may be controlled with 1° plus or minus, with the outlet water as low as 35°, or may be controlled at a temperature anywhere between 35° and 45°, permitting an increase in temperature where lower volumes of gas are required.

Variation in size of the units is such, it is claimed, that installation may be made as a complete water cooling and carbonating unit having its corresponding size compressor. This eliminates operation of a large compressor in large plants where only one bottling machine is operating.

Economy of operation in the new units has been effected, it is claimed, due to the fact that it is not necessary to build up a supply of ice during off periods to maintain a sufficient supply of cold water. The compressor operates only during the bottling period, maintaining a constant water temperature.

Compactness of the units is also said to cut down insulation losses, and smaller storage tanks to permit daily cleaning with small loss of cold water, since the tanks hold only from 15 to 55 gallons of water.

Storage tanks are of stainless steel, and are provided with separate lid to permit of inspection, cleaning, and flushing. The air is so vented as to permit any air or gases entrained in the water to escape before it is carbonated.

Water coils are constructed of copper tubing, and refrigerant coils of galvanized steel submerged in a neutralized brine solution. Where low pressure refrigerant is used, coils are of copper tubing.

Cabinet is regularly finished in white porcelain, trimmed in stainless steel and equipped with a stainless steel lid.

Star Salesman Visits Crosley Factory

CINCINNATI—Visiting the Crosley factory recently was S. G. "Doc" Mullins, salesman for the City Drug Co., Thomaston, Ga., who has the record of selling 150 refrigerators in three months in a town of 7,983.

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

KOCH REFRIGERATORS NORTH KANSAS CITY, MO.

Complete Market Equipment by KOCH

MIRAFLEX COILS

An exclusive feature (patent pending) available only in Koch Display Cases. These coils operate at higher back pressure and higher humidity, yet occupy less space. Distributors wanted for complete commercial cabinet line. Attractive prices.

TYLER'S NEW WELDED STEEL REFRIGERATOR CASES

At last a general purpose case at a sensible price. Offers every advantage of the most costly cases at tremendous savings. Modern in every detail. Comes equipped with coils. Single and double duty models.

AN AMAZING VALUE

Hundreds in use. Perfect refrigeration for meat, dairy and delicatessen products and all perishables sold in food stores. Write or wire for all the facts.

TYLER Sales-Fixture CO. Dept. E, Niles, Mich.

3 INCH INSULATION—TRIPLE GLASS

THE 3600 LINE OF DISPLAY CASES

MORE SQUARE FEET OF DISPLAY SPACE THAN MANY CASES CONSIDERABLY LARGER!

Three sizes are available—6, 8, and 10 feet long—and you have your choice of Porcelain or DuLux finish. Among the features are extra large rubber composition sliding doors; extra height doors for storage compartment; full view of illuminated display section; removable intermediate shelf; and 3" approved insulation. For real convenience, economy, room and accessibility, these cases have no equal.

SOLD ONLY THROUGH DEALERS & JOBBERS

WRITE FOR COMPLETE CATALOG

GLOEKLER MANUFACTURING COMPANY

429 FOURTH AVENUE PITTSBURGH, PA.

Complete line of Refrigerators, Display Cases, Store Fixtures. Desirable territory available. Write for particulars.

QUALITY THESCO SINCE 1870

THE C. SCHMIDT CO., CINCINNATI

PURO

ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.

Complete line of different Models and Capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City Spring 7-1800

The "Leitner System" Comes Fitted into this Fine Box

The "Captain" shown here is a standard, all steel Leitner Coil Box with "The Leitner System" and beer coils installed complete. Available in all sizes, 3 models. Gives temperature and pressure control in beer coils sensitive to 1°—under all operating conditions. Simplest, most trouble free circulating system made. Dealers and distributors wanted.

Send for Literature and Prices

Write Today

M. LEITNER & CO.

Leading Manufacturers and Distributors Since 1906

2322 OGDEN AVENUE

CHICAGO, ILL.

CASH IN ON FILTERPURE

- Installed in a minute's time in counter cases and reach-in boxes.
- Lowers temperature 8 to 12 degrees.
- Stops sweating.
- No taste transfer. You can place fish next to meat in absolute safety.
- Maintains color and firmness of meats.
- Uniform temperature and humidity.
- Retails for $29.50.

Filterpure is the fastest selling article ever introduced in the refrigeration field. It is the "missing link" to 100% refrigeration. Write today.

BETZ CORPORATION BETZ BUILDING Hammond, Ind.

KRACK ENGINEERED

LIFETIME COILS AND UNITS

CUSTOMIZED COILS: SUR-E-FEX, HUM-E-FEX, LOUVR-E-FEX, AIR-E-FEX

CUSTOMIZED UNITS: FAN-E-FEX, (Standard and DeLuxe), TRANS-E-FEX, DRAFT-E-FEX, BLO-E-FEX, VERT-E-FEX For Refrigeration, BREEZ-E-FEX, COMF-E-FEX, SAN-E-FEX For Air Conditioning. Send For New Literature

REFRIGERATION APPLIANCES, INC., 1342 W. Lake Street, Chicago

Service Methods

Instructions for Servicing Landers, Frary & Clark Universal Units

By K. M. Newcum

Third in the series of K. M. Newcum's articles covering general methods of servicing a particular make of a household electric refrigerator is the one published on this and the succeeding page, covering the "Universal" refrigerator manufactured by Landers, Frary & Clark of New Britain, Conn.

Since the systems used in practically all makes of household electric refrigerators are of one of the general types described in the MASTER SERVICE MANUAL, Mr. Newcum has simplified the problem of describing the service complaints and remedies by referring the reader to those parts of the MASTER SERVICE MANUAL which cover the problems and methods for the type of system involved.

The Universal household electric refrigerator manufactured by the Landers, Frary & Clark Co. of New Britain, Conn., uses a refrigerating system of the flooded type employing a low side float valve with two standard evaporator shut-off service valves. Refrigerator temperature is controlled by a thermostat.

Sulphur dioxide is the refrigerant used in the Landers, Frary & Clark refrigerator. Oil used for lubrication purposes is a special oil made up particularly for Landers, Frary & Clark.

Condensing unit is of the open type with a standard radiator-type condenser, and a liquid receiver. The liquid receiver is equipped with a standard liquid line shut-off service valve.

A photograph of the Landers, Frary & Clark condensing unit is shown in Fig. 1.

A top view of the condensing unit assembly is shown in the drawing, Fig. 2. The front view of the same assembly is shown in Fig. 3.

Following are the parts included in the condensing unit assembly:

A. Discharge shut-off service valve. No. 2.
AA. Suction line shut-off service valve. No. 1.
B. Valve seal cap
C. Service valve gaskets
D. Gauge port plug
E. Header
F. Oil case
G. Seal plate
H. V-belt
K. Condenser inlet
L. Condenser outlet
M. Motor
N. Compressor pulley
O. Motor pulley
P. Fan
Q. Shipping bolts.
R. Liquid receiver
S. Receiver support brackets
T. Motor terminal box
U. Condenser flare nut
V. Liquid line shut-off service valve. No. 3.
W. Condenser brackets
X. Suspension bar
Y. Base.
Z. Condenser

3 Views of Condensing Unit

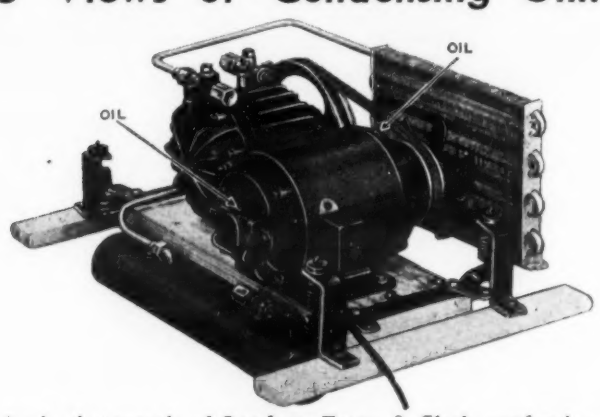


Fig. 1—A photograph of Landers, Frary & Clark condensing unit.

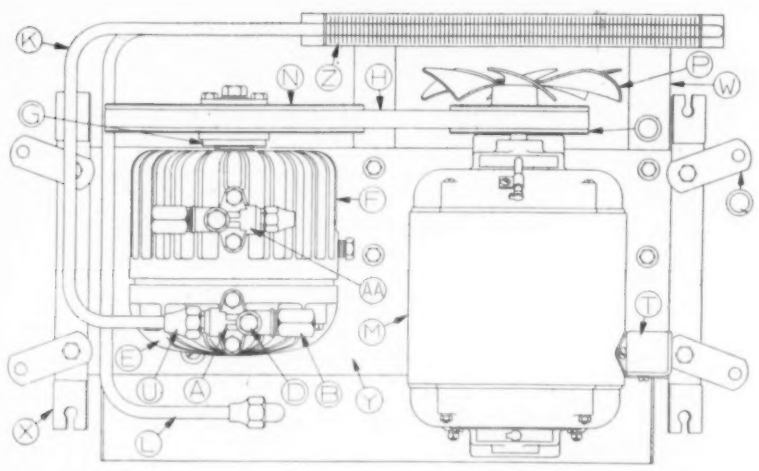


Fig. 2—Drawing showing top view of Universal condensing unit.

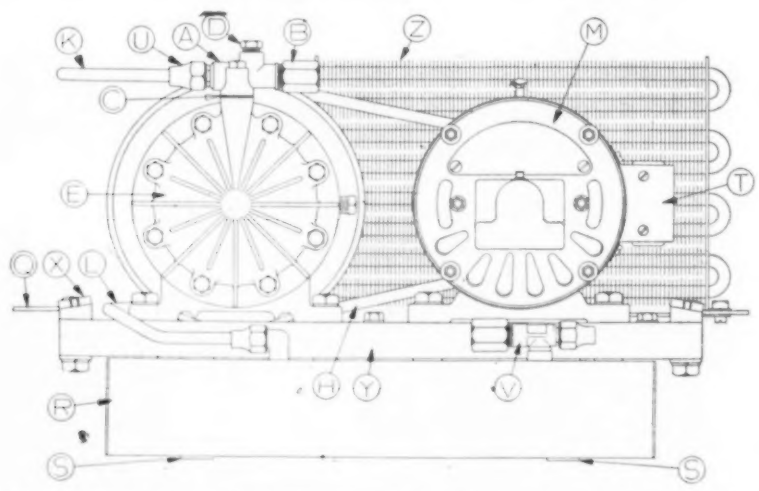


Fig. 3—Front view of condensing unit is shown above. Key for the sketch is given above in the text.

Cross Section of Compressor

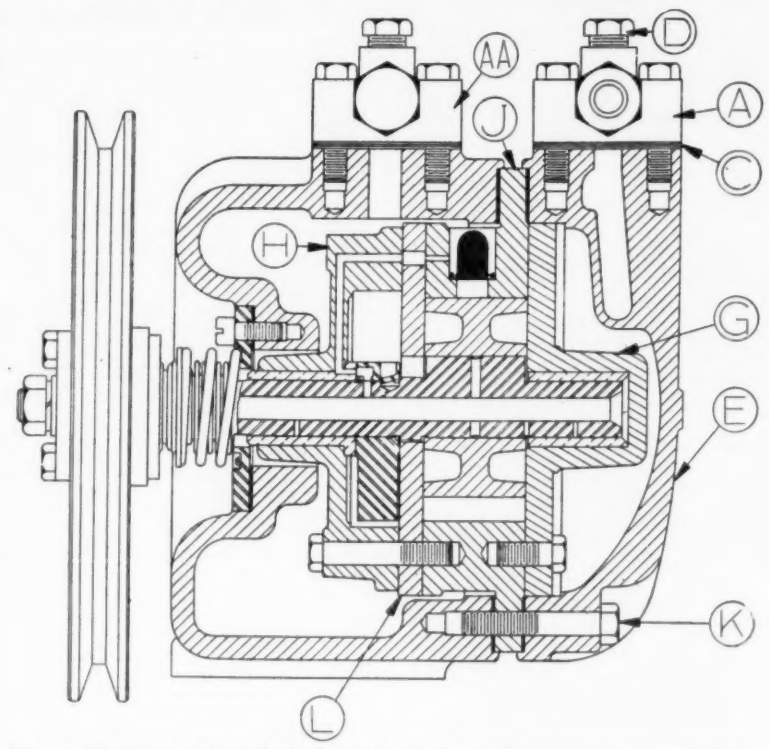


Fig. 4 illustrates the principal parts of the rotary compressor used in Landers, Frary & Clark refrigerators.

Rotary Compressor

Principal parts of the Universal rotary compressor may be seen in the cutaway drawing, Fig. 4.

Suction line shut-off service valve AA and discharge shut-off service valve A are of the two-way double shut-off type as shown in Fig. 5. They are bolted to the compressor body with cap screws. Three gaskets are used. A lead gasket is placed on either side of the steel gasket to form a gas tight joint.

The pump chamber shown in Fig. 6 illustrates the action of the Universal compressor. It is of the rotary type, having a cylindrical casing "A" containing a roll "B," mounted eccentric to the casing, a blade "C" and end plates, Fig. 4 (G) and Fig. 4 (H).

It will be seen that the crescent-shaped cavity "K" formed by the cylinder walls and roll, progresses as the shaft rotates. The blade "C" acts as a dam and divides the space "K" into a low pressure and high pressure section.

Cycle of Operation

Thus, as the shaft rotates in a counter-clockwise direction, the gas, located ahead of the point of contact between the roll, and the pump chamber and the lower side of the blade, is constantly being compressed into a ripidly diminishing space until the pressure in this space is greater than the pressure exerted on the discharge or flapper valve from without the chamber, and is forced past the valve into the header cavity and thence into the condenser.

At the same time as the gas is being compressed against the blade a suction is being created on the opposite side because of the ever increasing size of this space. This causes gas to be drawn through the suction port into the pump chamber. Consequently, compression and suction occur simultaneously.

The roll and blade, due to their relative action, form the oil pump for the lubricating system. As the roll moves away from the blade a vacuum is created in the cavity formed at "D". Oil from the oil case is immediately drawn into this space. This action takes place on the first half of the revolution. On the second half of the revolution the intake oil channels are blocked off and as the oil pump cavity decreases, the oil is forced through the center of the hollow shaft, and thence through ports to all bearing surfaces.

Oil Relief Port

To prevent oil from building up too high a pressure in the hollow shaft, a relief port (G in Fig. 7) opens with the bellows seal so that the oil may flow back into the oil case "D" Fig. 7.

The oil case, Fig. 2 (F) is a reservoir for lubricating oil as well as the housing for the pump chamber. As the gas and oil are drawn down the suction line into the compressor they do not pass directly into the compressor chamber but enter the oil chamber where they are separated. The oil being heavier drops to the bottom of the case, while the gas is drawn into the suction port and then into the compression chamber.

A sectional view of the seal is illustrated in Fig. 8. It consists of a bellows plate gasket "A", a bellows plate "B", a bellows "E", a spring "F" and a ring retainer "G", a snap ring "D", a high lead bronze-bearing ring "C", a seal plate "H", a seal plate gasket "K", a pulley-gasket "L", and a pulley or flywheel "N". The high lead bronze-bearing ring is held firmly against the seal bearing plate by the spring "F".

Stationary Bellows Assembly

The bellows assembly is stationary. The seal plate turns with the shaft. The metal to metal contact keeps the seal and ring highly polished to effect a gas tight seal.

The pulley "N" which drives the compressor is attached to the shaft and secured by means of locking key "M", lock washer "O", and nut "P". The gasket "L" serves to maintain a gas tight joint between the shaft and pulley. Surplus oil from the compressor oiling system is exhausted through the shaft and into the bellows to lubricate the seal, from where it returns to the compressor oil case.

Shut-Off Valve

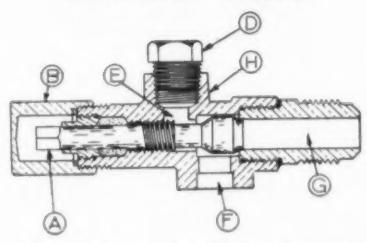


Fig. 5 is a detail drawing of the compressor shut-off valve.

Flapper Discharge Valve

The flapper type discharge or check valve is shown in detail in Fig. 9. Its purpose, like that in a reciprocating compressor, is to prevent compressed gases from reentering the pump chamber. This valve is positive acting and therefore completely isolates the seal from the high side pressure. It also makes unnecessary a check valve between the compressor and evaporator, such as is common in rotary compressor systems.

The valve consists of five main parts. The valve seat "A" is part of the high pressure end plate and is ground and polished to a mirror finish; the valve spring "B" made of high grade spring steel, the valve stop spring "C", the valve cover "D", and the muffler "E". The valve spring is assembled to the plate by means of a screw and lock washer.

Liquid line shut-off service valve, Fig. 10, is equipped with an extension tube "A" which extends to within ⅛ inch of the receiver. A screen "B" is soldered to the tube to act as a filter to prevent particles of dirt and foreign matter from being circulated with the refrigerant.

Evaporator for the Landers, Frary & Clark refrigerator has a removable float and header assembly. The evaporator shut-off service valves are made as an integral part of the header assembly and are not removable separately.

The principles of operation and general service information on low side float valves and evaporators as given on pages 73 to 81 of the MASTER SERVICE MANUAL would apply to this assembly.

Pump Chamber

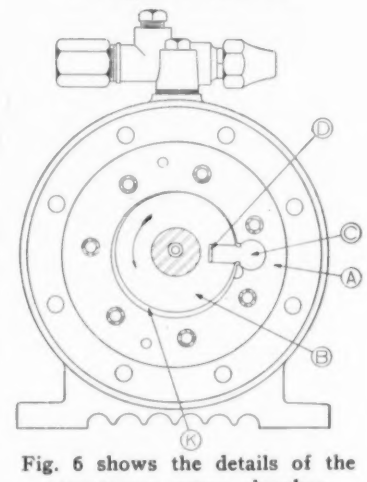


Fig. 6 shows the details of the compressor pump chamber.

The wiring diagram for the motor and thermostat is shown in Fig. 11. The Ranco type "F" thermostat, illustrated on pages 130 and 131 of the

(Concluded on Page 17, Column 3)

BUNDY
TUBING
for
DEPENDABILITY
DURABILITY
DIVERSABILITY
•
BUNDY TUBING CO.
Detroit

Universal Lubrication System

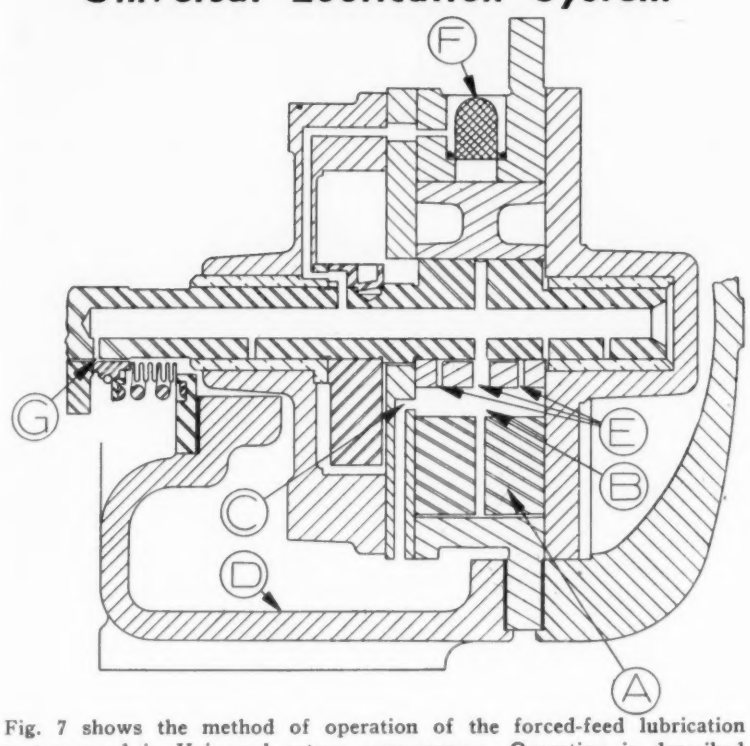


Fig. 7 shows the method of operation of the forced-feed lubrication system used in Universal rotary compressors. Operation is described on the opposite page.

Shaft Seal

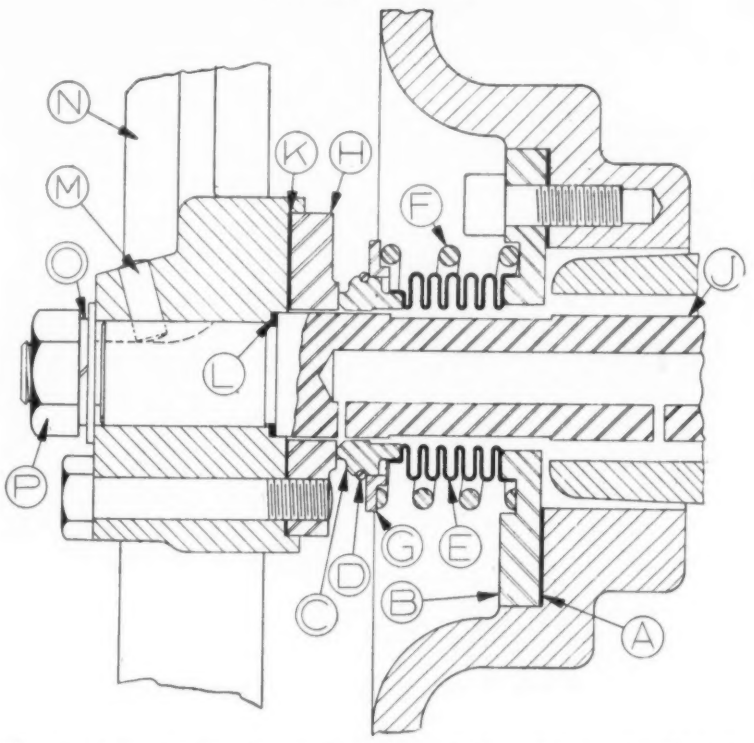


Fig. 8 demonstrates the construction of the shaft seal which is described on page 16.

Discharge Valve

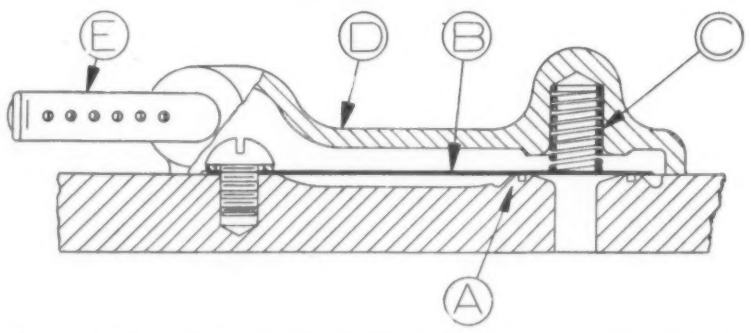


Fig. 9—All Universal compressors use a flapper type discharge valve to separate the high and low pressure sides.

Liquid Line Valve

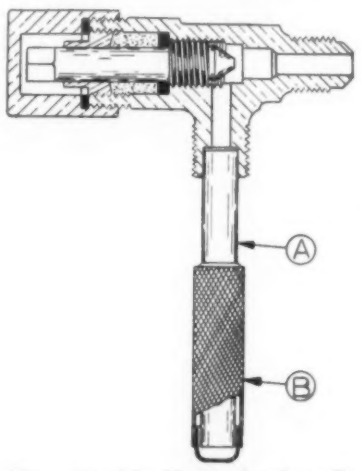


Fig. 10—Liquid line 'shut-off service valve is equipped with an extension tube 'A' and screen 'B.'

Wiring Diagram

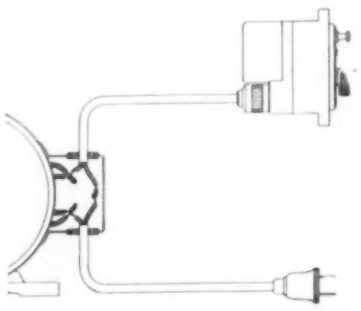


Fig. 11 illustrates the correct method of wiring the motor, thermostat, and plug in a Universal (Landers, Frary & Clark) refrigerator. The two types of thermostats employed in these units are Ranco type F and Cutler-Hammer type G.

Service Information On Universal Line

(Concluded from Page 16, Column 5)

MASTER SERVICE MANUAL, and the Cutler-Hammer type "G" (bulletin 9502) are the types of controls employed. They are adjusted at the factory to maintain proper refrigerator temperatures.

All Universal refrigerators from 4 cu. ft. to 8 cu. ft. use the same compressure. The 4, 5, and 6-cu. ft. models are operated with a compressor speed of 650 r.p.m., with the compressor driven by a ⅛-hp. motor. The 7 and 8-cu. ft. models run at a compressor speed of 850 r.p.m. with the compressor powered by a ¼-hp. motor.

All units in these sizes are interchangeable except for the motor size, pulley, and belt length.

The refrigerant charge on the smaller models is approximately 4 lbs. of sulphur dioxide, while the larger models require 5 lbs. The oil charge is 32 ounces.

It will be noted from this description that the Universal is a type "1C" system as described in the MASTER SERVICE MANUAL, and general service instructions given under this type, chapter 9 of the MASTER SERVICE MANUAL, would apply.

Interchangeable Bases Used On Orangeville Trucks

ORANGEVILLE, Pa.—For handling of electric refrigerators in home delivery, Orangeville Mfg. Co. has on the market an upholstered truck, available with interchangeable bases or "noses" for all types of units.

"Noses" are available in three widths, 6½, 9, and 26 inches. A feature of the "noses" is a quick change ratchet device, by which the cam lever may be released upward to a height of 13 inches, if desired.

The truck itself is upholstered to prevent chipping or marring refrigerator finishes, and handle bottoms are covered for protection of floors. Wheels are rubber tired to prevent damage to floors and steps. Truck is furnished with 2-inch Webb strips for attaching refrigerator to it when taking it up or down steps.

Double-track skid is also available for getting the refrigerator in and out of automobiles or other carriers.

Honecker Heads Fedders' New Branch in Boston

BUFFALO — A Fedders factory branch has just been opened in Boston at 712 Beacon St. under the management of Norman C. Honecker, factory engineer.

Warehouse stocks of refrigeration equipment and automotive radiator cores are carried for immediate delivery to the distributing trade throughout New England.

In addition, this branch places factory engineering service at the command of the manufacturers and distributors for any desired assistance in solving problems of design, installation and service.

Penn Moves Export Office

NEW YORK CITY—Penn Electric Switch Co.'s export office was moved on July 15 from 15 Laight St. here into larger quarters at 100 Varick St.

INFORMAL TALK NUMBER 57

800 Hours of Study—Plus 100 Hours of Practical Shop Work

That's what the average R-A-C-I new graduate student has behind him when he goes to work for you. You must take off your hat to this fellow. He has ambition, gumption and stick-to-it-iveness that you can use in your business. He has a knowledge of installation and service work and the many technical requirements of the refrigeration and air conditioning business that is exceeded by but few men. Give him a hand.

Thirty leading manufacturers have cooperated with the Institute in preparing this man to help you. They have given the time and services of their own engineers to supervise his training—just to make your service problems easier.

Write for details.

The REFRIGERATION AND AIR CONDITIONING INSTITUTE

2150 LAWRENCE AVE. • CHICAGO

The Officially Endorsed School

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

SERVICE DOESN'T FALTER WHEN IT COMES FROM HARRY ALTER

WHEN THE TEMPERATURE SOARS—DEPEND ON US FOR FAST SERVICE

REFRIGERATION PARTS and SUPPLIES

SEND FOR OUR *New* CATALOG

If you are engaged in the business of servicing or selling refrigeration you should have a copy of our new 96 page SUMMER catalog. Write today on your letterhead. We sell to the trade only.

COMPLETE STOCK Carried in Our BRANCH HOUSES

The HARRY ALTER CO., Inc.

MAIN OFFICES 1728 S. Michigan Ave., CHICAGO, ILL.

NEW YORK CITY 161 Grand St. | CLEVELAND, OHIO 4506 Prospect Ave. | ST. LOUIS, MO. 2315 Washington Ave.

REFRIGERATION-AIR CONDITIONING PARTS -SUPPLIES-ACCESSORIES

FEATURING

Everything from ONE source
QUALITY merchandise
COMPLETE stocks at all times
Intelligent PROMPT service

BORG WARNER SERVICE PARTS CO.
Division Borg-Warner Corp.
2100 Indiana Avenue Chicago, Illinois

PARTS-SUPPLIES-TOOLS for REFRIGERATION-AIR CONDITIONING

Complete Stock—Quick Service

One-day service on your order for any parts, supplies or tools you may need for any type of refrigerator or air conditioner. QUALITY MERCHANDISE, absolutely guaranteed and offered at the lowest prices. Deal with us—obtain all your needs from one source—and rely absolutely on getting exactly what you order. WHOLESALE ONLY for your protection. Request big, complete, new catalog on your business card or letterhead. It's FREE.

SEND FOR BIG FREE CATALOG

AIRO SUPPLY CO. 408-10 N. Wells St. CHICAGO, Ill.

ALL YOUR NEEDS FROM ONE SOURCE

Ready for your use — a new catalog featuring the

HASCO CHANGE-OVER

Complete modernization for old compressors. The Change-Over gives new design, new appearance, new economy. **Easy to install**—no holes to drill—no metal to cut. Sold exclusively by HASCO. Get the details from this new catalog—**send for your copy today.**

We also stock a complete line of **Ultra Precision Parts,** backed by the HASCO guarantee of mechanical perfection.

HOME APPLIANCE SERVICE CO.
714-16 W. Market St. Greensboro, N. C.

REFRIGERATION · AIR CONDITIONING

PARTS · TOOLS · SUPPLIES

LARGEST STOCKS · WIDEST SELECTION · FASTEST SERVICE

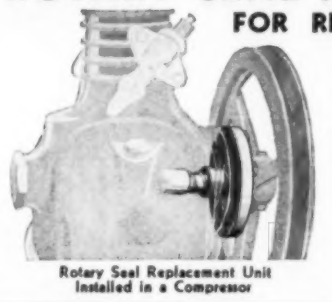
Wholesale Only

OUR CATALOG PROTECTS YOU · SEND FOR IT NOW

133 N. WACKER DRIVE H. CHANNON CO. CHICAGO

ROTARY SEAL REPLACEMENT UNITS

FOR REFRIGERATOR COMPRESSORS



Rotary Seal Replacement Unit Installed in a Compressor

- QUICKLY AND EASILY INSTALLED
- SAVE TIME AND TROUBLE
- PREVENT SHAFT LEAKS

With the many acknowledged advantages, ROTARY SEAL UNITS are unquestionably the most perfect replacement seal units available.

STRONG, ECONOMICAL, SILENT
GUARANTEED TO GIVE PERFECT SATISFACTION

ROTARY SEAL COMPANY
801 W. Madison St. Chicago, Ill.

Patents

Issued June 9, 1936

2,043,450. AIR CONDITIONING APPARATUS. Gordon H. Simmons, Milwaukee, Wis., assignor to William M. Devine, Chicago, Ill. Application June 26, 1935, Serial No. 28,434. 8 Claims. (Cl. 257—3.)

2,043,496. EVAPORATOR FOR REFRIGERATION SYSTEMS. Albert E. Schneider, Carter Lake, Iowa, assignor to Baker Ice Machine Co., Inc., Omaha, Nebr. Application Sept. 19, 1932, Serial No. 633,710. 4 Claims. (Cl. 62—126.)

2,043,535. MULTISTAGE COMPRESSOR. Harry A. Feldbush, Short Hills, N. J., assignor to Worthington Pump & Machinery Corp., New York, N. Y. Application June 19, 1934, Serial No. 731,240. 1 Claim. (Cl. 230—199.)

2,043,548. ABSORPTION REFRIGERATING MACHINE. Guido Maiuri, Aldwych, London, England, assignor to Maiuri Refrigeration Patents Limited, London, England. Application Nov. 11, 1935, Serial No. 49,133. In Great Britain Oct. 30, 1935. 4 Claims. (Cl. 62—119.)

2,043,561. APPARATUS FOR CONTROLLING AND INDICATING AIR VOLUME. James E. Sims, Bridgeport, Conn., assignor, by mesne assignments, to Reconstruction Finance Corp., New York, N. Y. Application Aug. 25, 1932, Serial No. 630,421. 13 Claims. (Cl. 98—39.)

2,043,647. HUMIDIFIER. Sigurd O. Berven, Brooklyn, N. Y. Application May 14, 1934, Serial No. 725,475. 8 Claims. (Cl. 261—14.)

2,043,803. PRESSURE SWITCH. Earl F. Mekelburg, Wauwatosa, Wis., assignor to Square D. Co., Detroit, Mich. Application April 9, 1934, Serial No. 719,673. 8 Claims. (Cl. 200—168.)

2,043,834. AIR CONDITIONING APPARATUS. Ralph E. Marbury, Wilkinsburg, Pa., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application June 14, 1934, Serial No. 730,576. 6 Claims. (Cl. 236—91.)

2,043,849. VALVE ASSEMBLY. Harley H. Bixler, Schenectady, N. Y., assignor to General Electric Co. Application June 15, 1935, Serial No. 26,796. 19 Claims. (Cl. 230—231.)

2,043,881. ICE CUBE PAN. Michael K. Buchanan and Albert G. Horton, Norfolk, Va. Application July 25, 1933, Serial No. 682,157. 17 Claims. (Cl. 62—108.5.)

2,043,917. EVAPORATOR FOR REFRIGERATING MACHINES. Leonard W. Atchison, Schenectady, N. Y., assignor to General Electric Co. Application Nov. 1, 1934, Serial No. 750,977. 20 Claims. (Cl. 62—126.)

Issued June 16, 1936

2,044,022. COOLING APPARATUS. Ernest F. Stalcup, Rutledge, Pa., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Application Oct. 20, 1933, Serial No. 694,511. 22 Claims. (Cl. 62—152.)

2,044,068. TEMPERATURE CONTROL SYSTEM FOR VEHICLES. Wilfred Fourness, Oakland, Calif., and Edward G. Burghard, New York, N. Y., assignors, by mesne assignments, to Fourness Development Corp., Ltd. Application Jan. 3, 1933, Serial No. 649,912. 9 Claims. (Cl. 62—129.)

2,044,127. CONTROL BY INTREGRATION. Hazor J. Smith, Springfield, Mass., assignor to Superstat Co., Springfield, Mass. Application Feb. 17, 1933, Serial No. 657,237. 13 Claims. (Cl. 236—91.)

2,044,221. FRAMEWORK FOR AIR FILTERS. Frank L. Myers and Harry V. Smith, Toledo, Ohio, assignors to Owens-Illinois Glass Co. Application Jan. 29, 1934, Serial No. 708,719. 13 Claims. (Cl. 183—44.)

2,044,239. AIR CONDITION INDICATOR. Frank Bullock, Lake Geneva, Wis., assignor to Middlebury Electric Clock Corp., Chicago, Ill. Application Nov. 7, 1934, Serial No. 751,872. 3 Claims. (Cl. 73—24.)

2,044,269. LUBRICATING SYSTEM. Walter W. Williams, Bloomington, Ill. Application Nov. 7, 1934, Serial No. 751,800. 6 Claims. (Cl. 184—6.)

2,044,330. AIR CONDITIONER. Alfred Richter, Berlin-Reinickendorf-Ost, Germany. Application March 6, 1933, Serial No. 659,868. In Germany March 5, 1932. 10 Claims. (Cl. 62—170.) (Granted under the provisions of sec. 14, act of March 2, 1927; 370 O. G. 5.)

2,044,352. AIR CONDITIONING SYSTEM. William A. Evans, Maplewood, N. J. Application May 5, 1934, Serial No. 724,035. 11 Claims. (Cl. 62—6.)

2,044,397. TEMPERATURE RESPONSIVE SWITCH. Lawrence M. Persons, Des Moines, Iowa, assignor to Penn Electric Switch Co., Des Moines, Iowa. Application Oct. 16, 1933, Serial No. 693,812. 6 Claims. (Cl. 200—139.)

2,044,455. DISTRIBUTING HEAD FOR EVAPORATORS. Ernst Witzel, Racine, Wis., assignor to Young Radiator Co., Racine, Wis. Application May 16, 1935, Serial No. 21,770. 6 Claims. (Cl. 62—126.)

2,044,457. HEAT EXCHANGER. Fred M. Young, Racine, Wis. Application Nov. 25, 1935, Serial No. 51,452. 5 Claims. (Cl. 257—151.)

2,044,461. MEANS FOR CONTROLLING HEAT EXCHANGE APPARATUS. Rudolf Beck, Bridgeport, Conn., assignor to Consolidated Ashcroft Hancock Co., Inc., Bridgeport, Conn. Application July 20, 1934, Serial No. 736,185. 7 Claims. (Cl. 236—82.)
(Sketch excluded.)

2,044,482. REFRIGERATION APPARATUS. Glenn Muffly, Scarsdale, N. Y. Application Nov. 5, 1932, Serial No. 641,352. 30 Claims. (Cl. 62—4.)

2,044,500. REFRIGERATOR LATCH. Carl Geske and Clyde E. Yost, Grand Rapids, Mich., assignors to Winters & Crampton Corp., Grandville, Mich. Application June 17, 1935, Serial No. 26,898. 2 Claims. (Cl. 292—254.)

2,044,538. AIR CONDITIONING APPARATUS. Maxwell F. May, Palos Park, Ill. Application April 4, 1935, Serial No. 14,725. 15 Claims. (Cl. 236—1.)

2,044,597. REFRIGERATION. Albert R. Thomas, Evansville, Ind., assignor, by mesne assignments, to Servel, Inc., Dover, Del. Application Jan. 29, 1934, Serial No. 708,800. 28 Claims. (Cl. 62—118.)

2,044,600. REFRIGERATING APPARATUS. Harry M. Williams, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp. Application July 3, 1931, Serial No. 548,612. 6 Claims. (Cl. 62—89.)

2,044,609. REFRIGERATION. William Theodore Hedlund, Mount Vernon, N. Y., assignor to Servel, Inc., New York, N. Y. Application Jan. 12, 1929, Serial No. 332,162. 22 Claims. (Cl. 62—91.5.)

2,044,729. CONTROL DEVICE. Lewis W. Eggleston and Earnest J. Dillman, Detroit, Mich., assignors to Detroit Lubricator Co., Detroit, Mich. Application March 6, 1933, Serial No. 659,664. 6 Claims. (Cl. 200—83.)

2,044,736. CONTROL APPARATUS. Estel C. Raney, Columbus, Ohio, assignor to The Automatic Reclosing Circuit Breaker Co., Columbus, Ohio. Application Jan. 23, 1936, Serial No. 60,446. 26 Claims. (Cl. 200—83.)

2,044,750. ART OF REFRIGERATION AND APPARATUS THEREFOR. Forrest Le Grand Bryant, New York, N. Y. Application Nov. 19, 1935, Serial No. 50,499. 28 Claims. (Cl. 62—153.)

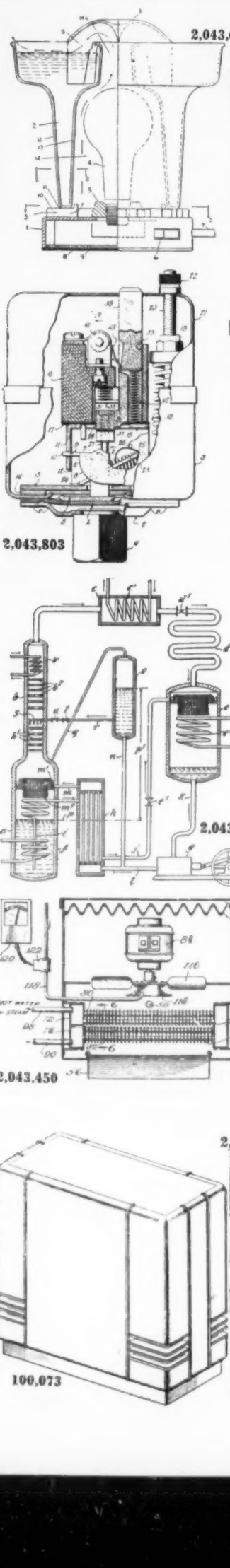
REISSUES

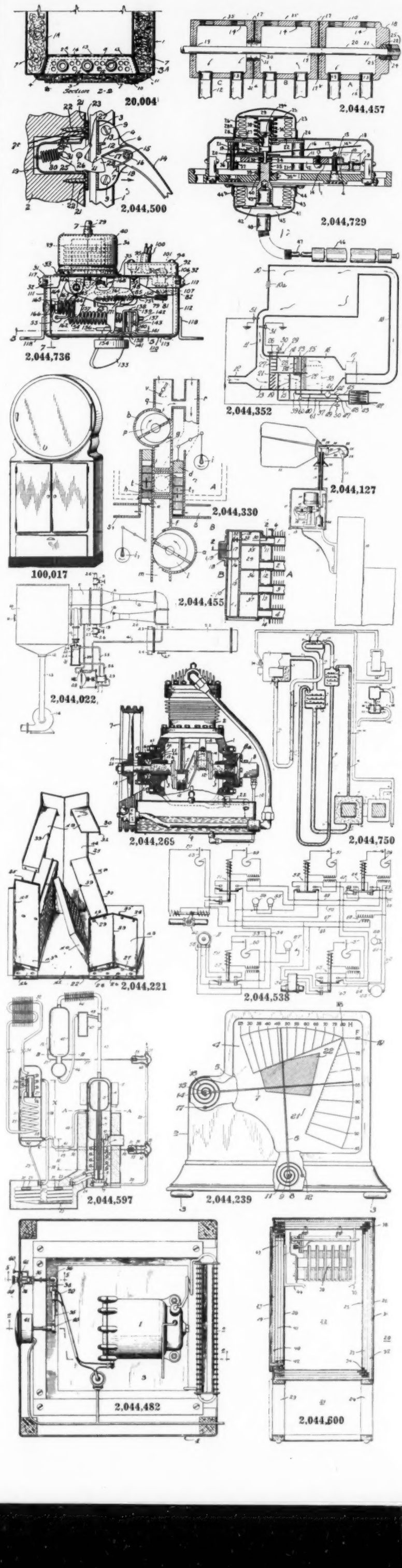
20,004. DOOR CONSTRUCTION FOR REFRIGERATORS. Allen A. Canton, New York, N. Y., assignor, by mesne assignments, to The Crosley Radio Corp., Cincinnati, Ohio. Original No. 2,021,096, dated Nov. 12, 1935, Serial No. 640,871, Nov. 2, 1932. Application for reissue April 24, 1936, Serial No. 76,295. 18 Claims. (Cl. 62—89.)

DESIGNS

100,017. DESIGN FOR A COMBINATION STORAGE AND REFRIGERATOR CABINET. Lionel J. Gottschalk, New Orleans, La. Application Oct. 9, 1935, Serial No. 58,904. Term of patent 3½ years.

100,073. DESIGN FOR A REFRIGERATOR CABINET. Chester A. Frick, Muncie, Ind., assignor to Glascock Brothers Mfg. Co., Muncie, Ind. Application Nov. 15, 1935, Serial No. 59,593. Term of patent 14 years.





Questions

Ice Cream Cabinets

No. 2828 (Appliance Department, Illinois)—"We would appreciate names and locations of manufacturers of bottle coolers. We are interested in securing information on ice cream cabinets. We would like to be placed on your catalogue mailing list."

Answer: Bottle beverage cooler manufacturers are listed on pages 171 and 172 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY, and manufacturers of ice cream cabinets are listed on pages 200 through 202 of the Directory. Portable Elevated Mfg. Co., Bloomington, Ill., which came into the field after the Directory was out, should also be added to this list.

'Meter Miser'

No. 2829 (Investment House, New York)—"We are enclosing herewith a clipping of an item for refrigerators called "Meter-Miser," which has been sent us by one of our customers.

"If you are in a position to do so, will you please give us the name of the manufacturer of this item?"

Answer: The "Meter-Miser" is a refrigerating unit for a household refrigerator and is manufactured by Frigidaire Corp., Dayton, Ohio.

Specifications Book

No. 2830 (Dealer, California)—"We are interested in subscribing to the ELECTRIC REFRIGERATION NEWS, and receiving the refrigeration and air conditioning specifications. Please advise if this book contains any information other than adhered to in the specifications issue of April 22.

"Please refer us to any company or companies where we can purchase refrigerator accessories, such as glassware, porcelain ware, deodorizers etc."

Answer: THE REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS BOOK will include, in addition to the specifications of 1936 household electric refrigerators as published in the April 22 issue of ELECTRIC REFRIGERATION NEWS, complete specifications of *all models and makes* of household and commercial refrigerators *of previous years*. It will also contain air conditioning specifications similar to those published in the May 20 issue of the NEWS.

Manufacturers of refrigerator accessories are listed on pages 253 through 255 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

'Better Buymanship'

No. 2831 (Reader, New York)—"Our attention has just been called to the announcement of your new book 'Refrigeration and Air Conditioning Specifications—All Models—All Makes—All Years.' We should like to obtain one copy of this book, price of which we understand is $3 per copy.

"We should also like to receive two copies of Booklet No. 19—Better Buymanship—mentioned on page 10 of the April 29, 1936 issue of ELECTRIC REFRIGERATION NEWS."

Answer: "Better Buymanship" is published by the Research Dept. of the Household Finance Corp., 919 North Michigan Ave., Chicago, and we suggest that you write to them for copies.

'Kling Tite' Tackers

No. 2832 (Dealer, New Jersey)—"Please advise us who is the manufacturer of the 'Kling Tite Automatic Tacking Machines.'"

Answer: Try the United States Indestructible Gasket Co., 827 E. 15th St., Brooklyn, N. Y. for information on the "Kling Tite Automatic Tacking Machine."

Data on Sales Figures

No. 2833 (Publishing House, Ohio)—"I want to thank you very much for the refrigerator industry sales figures which you sent to us. I am wondering whether these figures are manufacturers' shipments or whether they represent actual dealer sales by months."

Answer: The refrigerator industry sales figures which we publish represent manufacturers' sales to distributing outlets and not actual dealer sales.

Non-Electric Milk Coolers

No. 2834 (Dealer, Iowa)—"Will you please tell us the names and addresses of some of the companies which manufacture milk coolers which use gas engines, and which will cool milk using some method other than electricity?"

Answer: Servel, Inc., Evansville, Ind.; and Waukesha Motor Co., Waukesha, Wis.

Auto Air Conditioner

No. 2835 (Dry Goods Co., Oklahoma)—"I understand that somebody is manufacturing an air conditioner for automobiles. Will you please send me the names of anyone manufacturing same?"

Answer: See below.

No. 2836 (Dealer, Michigan)—"I am very much interested in knowing whether or not there is an air conditioner of any kind made for automobiles. If there is, would you please give me their names and addresses? I am a constant reader of your paper."

Answer: A story regarding the new air conditioning system for buses and automobiles developed by the Houde Engineering Corp., and Carrier Engineering Corp., was published in the November 6, 1935 issue of ELECTRIC REFRIGERATION NEWS.

Cost of Operation

No. 2837 (Dealer, New Jersey)—"I understand that you put out a statement showing the merits of the popular refrigerators, including a report on cost of operation of the different types, such as, General Electric, Westinghouse, General Motors' Frigidaire, Kelvinator etc.

"Will you kindly let me have a copy of your latest report?"

Answer: Specifications of all makes of household electric refrigerators were published in the July 1 issue of the NEWS, copies of which are obtainable at 25 cents per copy.

We have issued no statement on the comparative merits of the various makes. You may have reference to an article (published in the March 25 issues of the NEWS) by Prof. Royce Johnson of the University of Wisconsin describing tests that were conducted on various household electric refrigerators by the Electrical Standards Laboratory.

Though this article does not give the names of the refrigerators tested nor the actual cost of operation, it does give all the characteristics of each refrigerator tested and the current consumption and temperatures maintained under various conditions. Copies of this issue are obtainable at a cost of ten cents each.

Defunct Companies

No. 2838 (Distributor, New York)—"About three or four years ago you published in one of the issues of ELECTRIC REFRIGERATION NEWS a list of defunct electric refrigerator manufacturers. I was wondering if it would be possible for me to secure a copy of this?"

Answer: We have published two such lists. The first listing, which just gave the names and addresses of the companies, was published in the December 28, 1932, issue of ELECTRIC REFRIGERATION NEWS.

The second listing, which was more complete and which gave a brief corporate history of the companies no longer in business, was published in the September 5, 1934 issue of the NEWS.

Companies which are now active in the electric refrigeration field may be noted by referring to the July 1, 1936, household refrigerator specifications issue.

Fresh'nd-Aire Corp.

Union Steel Products Company
Albion, Mich.

Editor:

Possibly someone has already given you the information to answer Question 2805 appearing in your June 17 issue of the ELECTRIC REFRIGERATION NEWS. However, if they haven't we believe that the manufacturer is the Fresh'nd-Aire Corp., 430 Erie St., Chicago.

This company manufactures electric fans with some sort of an air-conditioning contraption mounted on the motor housing.

LEONARD BUTTERS,
Sales Department.

Exports of Electric Refrigerators

April, 1936, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

	Electric Household Refrigerators Number	Electric Household Refrigerators Value	Electric Commercial Refrigerators Up to 1 Ton Number	Electric Commercial Refrigerators Up to 1 Ton Value	Parts for Electric Refrigerators Value
Austria	91	$ 7,818	13	$ 772	$ 5,181
Belgium	191	13,136	48	4,041	8,959
Bulgaria	2	149	...	...	...
Czechoslovakia	262	12,802	2	971	1,686
Denmark	3	387	2	334	1,840
Finland	25	1,929	...	...	1,705
France	1,858	125,651	548	29,517	39,328
Germany	...	...	...	...	10
Gibraltar	3	227	...	...	10
Greece	31	3,690	3	581	288
Irish Free State	7	720	4	467	273
Italy	44	2,891	1	734	2,799
Netherlands	310	21,572	33	4,858	13,242
Norway	173	11,378	50	4,497	5,063
Poland & Danzig	...	...	...	...	217
Portugal	19	1,437	3	214	36
Rumania	4	532	...	...	32
U.S.S.R. (Russia)	10	1,590	...	...	...
Spain	529	40,426	61	8,353	9,187
Sweden	138	10,663	35	3,837	6,017
Switzerland	113	8,878	1	589	3,509
United Kingdom	5,730	418,251	547	45,353	175,111
Yugoslavia	25	1,939	18	2,939	125
Canada	2,042	100,315	239	20,739	118,096
Costa Rica	9	808	...	...	20
Guatemala	...	...	1	111	27
Honduras	7	954	1	199	...
Nicaragua	1	158	...	...	7
Panama	91	10,549	17	2,526	2,254
Salvador	17	1,666	...	...	97
Mexico	590	53,487	28	3,745	14,158
Newfoundland & Labrador	18	1,744	...	...	44
Bermuda	65	5,391	3	554	1,067
Barbados	10	790	...	...	10
Jamaica	3	286	...	...	221
Trinidad & Tobago	20	1,962	1	123	62
Other British W. Indies	10	880	1	152	323
Cuba	531	50,372	54	9,958	6,320
Dominican Republic	14	1,508	...	...	65
Netherland West Indies	35	2,641	1	100	638
French West Indies	14	1,183	...	...	154
Haiti, Republic of	7	519	...	...	207
Argentina	32	2,684	12	1,795	4,273
Bolivia	1	174	...	...	...
Brazil	386	34,593	51	7,090	11,348
Chile	56	3,786	2	253	622
Colombia	282	25,017	19	2,341	608
Ecuador	10	734	...	...	178
British Guiana	8	561	...	...	3
Surinam	4	347	...	...	...
French Guiana	...	...	...	...	50
Paraguay	1	46	...	...	5
Peru	18	1,827	...	...	705
Uruguay	1	54	...	...	...
Venezuela	79	8,598	9	1,160	461
Aden	...	...	1	92	369
Saudi Arabia	1	92	...	...	345
British India	342	33,033	150	27,796	11,686
British Malaya	188	17,372	12	2,981	1,365
Ceylon	37	3,461	...	...	272
China	255	22,402	6	701	2,621
Netherlands India	114	10,956	25	4,005	4,459
French Indo-China	149	13,707	...	...	1,710
Hong Kong	62	7,753	6	467	546
Iraq	25	2,683	...	...	13
Japan	6	754	5	388	2,438
Palestine	582	46,107	66	7,666	4,730
Philippine Islands	134	12,517	15	2,187	1,758
Siam	14	998	...	...	...
Syria	39	3,941	14	2,369	2,284
Turkey	273	22,257	59	6,717	2,251
Other Asia	2	186	...	...	...
Australia	28	2,318	...	...	3,596
British Oceania	3	386	2	452	6
French Oceania	...	...	...	...	105
New Zealand	13	1,080	4	403	2,520
Belgian Congo	14	1,159	...	...	26
British East Africa	10	916	2	226	913
Union of South Africa	385	29,012	31	4,706	22,666
Other British South Africa	...	...	...	...	621
Gold Coast	18	1,721	...	...	527
Nigeria	3	307	...	...	340
Other British West Africa	5	464	...	...	28
Egypt	101	9,240	5	655	753
Algeria	195	13,889	40	3,730	917
Tunisia	312	22,810	18	2,139	3,276
Madagascar	9	576	...	...	85
Other French Africa	41	3,509	1	235	267
Italian Africa	3	316	...	...	...
Morocco	350	24,145	3	348	1,853
Mozambique	135	8,326	...	...	632
Canary Islands	36	2,939	...	...	34
Other Spanish Africa	26	1,623	...	...	...
Total	**17,840**	**$1,322,655**	**2,273**	**$227,166**	**$512,653**
Shipments to Hawaii	414	43,070	5	825	4,681
Puerto Rico	550	55,009	11	1,415	2,110
Virgin Islands	8	660	...	...	...

The Buyer's Guide

Special rates apply to this column only. Write Advertising Dept. for full information.

LEADING MAKERS OF REFRIGERATING AND AIR CONDITIONING EQUIPMENT STANDARDIZE ON

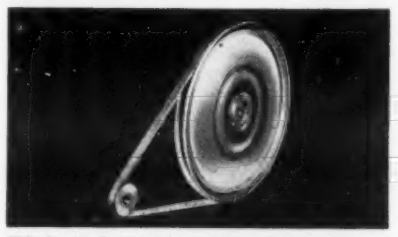
Dayton V-BELTS

● Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

Dayton V-Belts are the logical choice because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating.

A nearby distributor carries a complete stock of Dayton V-Belts at all times and can quickly supply you.

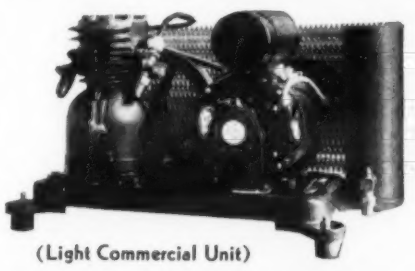
Write us for price list and complete information.



Whether for Fractional or a Thousand H.P. there is a Dayton V-Belt Drive for the job.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO
World's Largest Manufacturer of V-Belts

MILLS
COMPRESSORS
for Commercial Use
Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



(Light Commercial Unit)

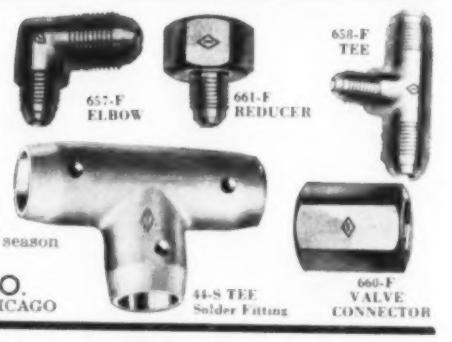
"CHIEFTAIN"
QUALITY-BUILT COMPRESSORS and CONDENSING UNITS
All bearings diamond bored. Positive lubrication of piston by newly developed process plus forced feed lubrication in all models.
Sizes: 1/6, 1/5, 1/4, 1/3 h.p.
Write for prices
TECUMSEH PRODUCTS CO., Tecumseh, Mich.

CONDENSING UNITS and COMPRESSORS
FOR
HOUSEHOLD REFRIGERATION
BY

JOMOCO, INC.
A SUBSIDIARY OF THE
JOHNSON MOTOR CO.
Waukegan, Ill.
CABLE ADDRESS: JOMOCO-WAUKEGAN

REMPE
FIN COILS
for Commercial Use
Rempe Co. • 340 N. Sacramento Blvd. • Chicago, Illinois

Specially Designed for Refrigeration
IMPERIAL FITTINGS



IN this complete line, all nuts, tees, etc., are made from brass forgings, and the connectors and unions from extruded bronze rod (not subject to season cracking). Write for Catalog 77-E.

IMPERIAL BRASS MFG. CO.
565 S. Racine Ave. CHICAGO